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INSTALLATION RESTORATION PROGRAM PHASE II
CONFIRMATION/QUANTIFICATION STA..(U) RADIAN CORP AUSTIN
TX SEP 86 F33615-84-D-4482

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

AD-A175 325

214-114-04

INSTALLATION RESTORATION PROGRAM
PHASE II - CONFIRMATION/QUANTIFICATION
STAGE 1

VOLUME 2 - APPENDICES A-M

CANNON AFB, NEW MEXICO 88103

RADIAN CORPORATION
8501 MO-PAC BLVD.
P.O. BOX 9948
AUSTIN, TEXAS 78766

September 1986

FINAL REPORT FOR PERIOD 9/84 - 4/85

APPROVED FOR PUBLIC RELEASE
DISTRIBUTION UNLIMITED

PREPARED FOR
HEADQUARTERS TACTICAL AIR COMMAND
COMMAND SURGEON'S OFFICE (HQ TAC/SGPB)
BIOENVIRONMENTAL ENGINEERING DIVISION
LANGLEY AFB, VIRGINIA 23665-5001

UNITED STATES AIR FORCE
OCCUPATIONAL & ENVIRONMENTAL HEALTH LABORATORY (USAFOEHL)
BROOKS AIR FORCE BASE, TEXAS 78235-5501

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Unclassified

SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION Unclassified		1b RESTRICTIVE MARKINGS N/A	
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6a NAME OF PERFORMING ORGANIZATION Indian Corporation	6b OFFICE SYMBOL (If applicable)	7a NAME OF MONITORING ORGANIZATION USAFOEHL/TS	
8a ADDRESS (City, State and ZIP Code) 601 Mo-Pac Boulevard O. Box 9948 Ogallala, TX 78766		7b ADDRESS (City, State and ZIP Code) Brooks AFB, TX 78235-5501	
9a NAME OF FUNDING SPONSORING ORGANIZATION AFPERHL/TS	9b OFFICE SYMBOL (If applicable)	9c PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER F33615-84-D-4402/0004	
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		PROJECT NO	WORK UNIT NO.
11 TITLE (Include Security Classification) Installation Restoration Program Phase II - Confirmation/Quantification Stage 1, Cannon AFB, New Mexico (Unclassified).			
12 PERSONAL AUTHOR(S) Indian Corporation			
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16 SUPPLEMENTARY NOTATION			
17a COSATI CODES		17b SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
17a.1	17a.2	Installation Restoration Program, Cannon AFB, Ogallala Formation, Caliche	
17a.3			
17a.4			
18 ABSTRACT (Continue on reverse if necessary and identify by block number)			
<p>► The Cannon AFB IRP Phase II Stage 1 program consisted of installation and sampling of four monitor wells and 41 soil borings at 15 locations on-base. The four monitor wells were located in a one-upgradient, three-downgradient configuration surrounding the active base landfill (Site No. 5).</p> <p>Wells were drilled to about 15 feet below the top of the saturated zone of the Ogallala Formation. Each well was completed with a four-inch diameter PVC casing and 15-foot screen and equipped with a dedicated submersible pump.</p> <p>Ground-water levels were measured to confirm the local ground-water flow direction and samples were collected for analysis of selected organic and inorganic parameters. Resulting data revealed no evidence of contamination by purgeable halocarbons or aromatics, oil and grease, pesticides, or metals.</p> <p style="text-align: right;">(continued)</p>			
19 DISTRIBUTION/AVAILABILITY OF ABSTRACT		21 ABSTRACT SECURITY CLASSIFICATION	
CLASSIFIED UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS <input type="checkbox"/>		Unclassified	
22a NAME OF RESPONSIBLE INDIVIDUAL Colonel Edward S. Barnes		22b TELEPHONE NUMBER (Include Area Code) 512/536-2158	22c OFFICE SYMBOL USAFOEHL/TS

FORM 1473, 83 APR

EDITION OF 1 JAN 73 IS OBSOLETE

Block 19 (continued)

Soil samples were collected as cuttings or cores immediately above, five feet into, and immediately below the base of the caliche zone in each borehole at the 15 project sites. Some deep soil core samples were unobtainable due to the unconsolidated nature of the caliche. Analytical results confirm the presence of oil and grease components in the upper soil zone at several sites. Metals concentrations are generally low, except for some isolated species in samples from site Nos. 1 and 12. Elevated pesticide concentrations were detected in soil samples from Site No. 17.

①

INSTALLATION RESTORATION PROGRAM
PHASE II - CONFIRMATION/QUANTIFICATION
STAGE 1

FINAL REPORT
FOR
CANNON AFB, NEW MEXICO

VOLUME 2. APPENDICES A-M

HEADQUARTERS TACTICAL AIR COMMAND
COMMAND SURGEON'S OFFICE (HQ TAC/SGPE)
BIOENVIRONMENTAL ENGINEERING DIVISION
LANGLEY AFB, VIRGINIA 23665-5001

SEPTEMBER, 1986

PREPARED BY
RADIAN CORPORATION
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POST OFFICE BOX 9948
AUSTIN, TEXAS 78766

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RADIAN CONTRACT NO. 214-114, DELIVERY ORDER NO. 4

APPROVED FOR PUBLIC RELEASE
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USAF OEHL TECHNICAL PROGRAM MANAGER
LIEUTENANT COLONEL EDWARD S. BARNES

USAF OCCUPATIONAL & ENVIRONMENTAL HEALTH LABORATORY (USAF OEHL)
TECHNICAL SERVICES DIVISION (TS)
BROOKS AIR FORCE BASE, TEXAS 78235-5501

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NOTICE

This report has been prepared for the United States Air Force by Radian Corporation, Austin, TX, for the purpose of aiding in the implementation of the Air Force Installation Restoration Program. It is not an endorsement of any product. The views expressed herein are those of the contractor and do not necessarily reflect the official view of the publishing agency, the United States Air Force, nor the Department of Defense.

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(Volume 2)

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NTIS	<input checked="" type="checkbox"/>
DDI	<input type="checkbox"/>
U.S. Army	<input type="checkbox"/>
Date	
By	
Initials	
Approved	
Date	
A-1	25

APPENDIX A

Analytical Data

All samples for chemical analysis were submitted to Radian Analytical Services' laboratory. The samples were logged in, and the data reported out, in "batches." The following pages contain the analytical data reports for the various batches of samples. Table A-1 is a sequential listing of analytical reports contained in Appendix A, by batch number. Table A-2 is a cross-reference between sites and corresponding laboratory sample batches.

Table A-1

INDEX OF ANALYTICAL REPORTS, BY BATCH NUMBER

84-11-143

84-12-182

85-01-145

85-02-062

85-02-090

85-02-093

85-02-094

85-02-099

85-02-176

85-02-177

85-02-185

85-02-186

85-03-029

85-03-033

85-03-034

85-03-291

85-04-059

85-04-133

85-04-169

85-05-139

85-05-176

Table A-2
CROSS-REFERENCE

Site No.	Borehole/Well No.	Batch No.
1	A,B,C,D,E	85-02-186 85-03-029 85-03-033 85-05-176
2	A,B,C,D,E	85-02-090
3	A,B,C,D,E,F,G,H,I	85-02-093 85-02-176 85-02-177 85-03-029 85-03-033 85-03-034
4	A,B,C,D,E,F,G	85-02-094 85-02-185 85-02-186
5	A,B,C,D	85-01-145 85-04-169
6	A,B	84-11-143 85-02-099 85-05-139
7	1,2,3	84-11-143 84-12-182 85-02-099
8	1,2,3	84-11-143 85-02-099
9	A,B	85-02-090 85-03-291
11	A,B	85-02-062 85-02-090

Continued

Table A-2
CROSS-REFERENCE (con't)

Site No.	Borehole/Well No.	Batch No.
12	ST-1, ST-2, ST-3	85-02-062 85-03-291
13	A,B	85-03-029 85-03-034
15	A,B	85-02-090 85-03-291
17	A,B,C	85-02-062 85-03-291
19	A,B	85-02-062 85-03-291
-	Trip Blank	85-04-059
-	Background #s 1 + 2	85-04-133
5	Field Blanks (A,B,C,D)	85-04-169

LABORATORY CORPORATION

PAGE 1

RECEIVED: 11/21/84

Analytical Serv

REPORT

LAB # 84-11-143

01/02/86 13:24:20

REPORT Radian

TO BL 4

Austin

ATTEN Toby Walters

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 9

WORK ID sites 6,7,8, soils

TAKEN TKW

TRANS Fed Ex

TYPE

P. O. # 214-114-04-40

INV. # 4857

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P. O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Duplicate of report of 06/14/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	SB6A-1
02	SB6A-2
03	SB6A-3
04	SB7-1
05	SB7-2
06	SB7-3
07	SB8-1
08	SB8-2
09	SB8-3

Analytical Serv TEST CODES and NAMES used on this report

ONG IR Oil and Grease, Infrared
PB CA Lead, low level
PREP W Special Digestion Method
PREP X Special Digestion Method

LABORATORY CORPORATION

PAGE 2
RECEIVED: 11/21/84

Analytical Serv
RESULTS BY TEST

LAB # 84-11-143

REPORT

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
DNG_IR	2000	2800	1700	1000	3400
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB_GA	4.5	3.2	28	3.1	3.9
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
PREP_W	12/06/84	12/06/84	12/06/84	12/06/84	12/06/84
date complete					
PREP_X	12/04/84	12/04/84	12/04/84	12/04/84	12/04/84
date complete					

TEST CODE	Sample 06	Sample 07	Sample 08	Sample 09
default units	(entered units)	(entered units)	(entered units)	(entered units)
DNG_IR	8600	1700	3800	2600
mg/L	ug/g	ug/g	ug/g	ug/g
PB_GA	3.9	3.7	2.9	1.7
ug/ml	ug/g	ug/g	ug/g	ug/g
PREP_W	12/06/84	12/06/84	12/06/84	12/06/84
date complete				
PREP_X	12/04/84	12/04/84	12/04/84	12/04/84
date complete				

ANALYTICAL SERVICES CORPORATION

PAGE 1

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Analytical Serv

REPORT

01/02/86 13:25:04

LAB # 84-12-182

REPORT Radian
TO BL 4
Austin

PREPARED Radian Analytical Services

BY 9501 MoPac Blvd

P O Box 9748

Austin, Texas 78766

CERTIFIED BY

ATTEN Debra Richmann

ATTEN

PHONE (512) 454-4777

CONTACT CONOVER

CLIENT CANNON AFB SAMPLES 1
COMPANY Cannon AFB
FACILITY

Analytical procedure: method 3550 (sonication extraction, IR)

WORK ID oil and grease redo

TAKEN TKW

TRANS Fed Ex

TYPE

P.O. # 214-114-04-40

INV. # 4934

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between
50 and 100%.

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

Q1 SB7-3

Analytical Serv TEST CODES and NAMES used on this report

ONG IR Oil and Grease, Infrared

PREP W Special Digestion Method

INFORMATION

PAGE 2

RECEIVED: 12/31/84

Analytical Serv

REPORT

RESULTS BY TEST

LAB # 84-12-182

TEST CODE	Sample 01
default units	(entered units)
QNG IR	80
mg/L	ug/g
PREP W	01/22/85
date complete	

CORPORATION

PAGE 1

RECEIVED: 01/28/85

Analytical Serv

REPORT

03/07/86 17:00:08

LAB # 85-01-145

REPORT Radian
TO BL 4

Austin

ATTEN Toby Walters

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 4

WORK ID site 5 water

TAKEN IW

TRANS IW

TYPE

P.O. # 214-114-04-30

INV. # 5298

PREPARED Radian Analytical Services

BY 8501 MuPac Blvd

P.O. Box 9948

Austin, Texas 78765

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Duplicate of report of 05/14/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between
50 and 100%.

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 well A
02 well B
03 well C
04 well D

Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPE	MN E	Manganese, ICPE
AS GA	Arsenic, low level	NA E	Sodium, ICPE
BA E	Barium, ICPE	NI E	Nickel, ICPE
CA E	Calcium, ICPE	NO3 A	Nitrate, Colorimetric
CD E	Cadmium, ICPE	PB GA	Lead, low level
CL IC	Chloride IC	PHEN A	Total Phenolics
CR E	Chromium, ICPE	PH 4	pH for RCRA Groundwater
CU E	Copper, ICPE	PH A	pH
FE E	Iron, ICPE	SE GA	Selenium, low level
FI IC	Fluoride, IC	SO4 IC	Sulfate IC
GC 901	EPA Method 901/GC	TDS A	Total Dissolved Solids
GC 902	EPA Method 902/GC	TOC	Total Organic Carbon
HG GA	Mercury, Cold Vapor	TOC 4	TOC for RCRA Groundwater
K E	Potassium, ICPE	TOX 1	TOX Single Analysis
MG E	Magnesium, ICPE	TOX 4	TOX for RCRA Groundwater
MD 4A	Conductance for RCRA	TP04 A	Total Phosphate
MD 4	Specific Conductance	ZN E	Zinc, ICPE

CORPORATION

PAGE 2

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REPORT

LAB # 85-01-145

RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)
AG E ug/ml	<.002	<.002	<.002	<.002
AS GA ug/ml	0.006	<.0002	0.0004	0.0005
BA E ug/ml	0.074	0.32	0.079	0.15
CA E ug/ml	37	55	44	45
CD E ug/ml	<.001	0.003	0.002	<.002
CL IC mg/L	53	50	50	51
CR E ug/ml	0.001	0.002	<.002	0.004
CU E ug/ml	<.001	<.001	<.001	0.002
FE E ug/ml	0.020	0.34	0.020	0.047
F IC mg/L	2.6	2.7	2.6	2.4
HG CA ug/ml	0.0004	0.0006	0.0004	0.0006
KE ug/ml	3.7	4.7	3.7	4.1
MG E ug/ml	37	38	40	36
MHO A umhos		810	740	720

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PAGE 3

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RESULTS BY TEST

REPORT

LAB # 85-01-145

CONTINUED FROM ABOVE

MN_E	0.021	0.76	0.33	0.52
ug/ml				
NA_E	60	62	57	53
ug/ml				
NI_E	0.032	0.035	0.035	0.030
ug/ml				
NO3_A	0.81	0.81	0.82	0.88
mg/L as N				
PB_GA	<.002	<.002	<.002	<.002
ug/ml				
PHEN_A	<.005	0.041	<.005	<.005
mg/L				
PH_A		7.60	7.20	8.20
pH units				
SE_GA	<.002	<.002	<.002	<.002
ug/ml				
SO4_IC	120	130	120	110
mg/L				
TDS_A	490	440	450	430
mg/L				
TUC		2	1	<1
mg/L				
TUX_1		<.01	<.01	<.01
mg/L				
TPQ4_A	0.05	0.05	0.04	0.05
mg/L as P				
ZN_E	0.015	0.010	0.010	<.003
ug/ml				

PAGE 4
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Analytical Serv

REPORT

Results by Sample

67-10-55 # 5A7

SAMPLE ID well A

FRACTION OF

TEST CODE GC 401 NAME EPA Method 601/GC

Date & Time Collected 01/25/85 13:30:00

Category

DATA FILE
CONC. FACTOR

७३

DATE INJECTED 01/30/85

ANAL YST
INSTRUMENT

134

VERIFIED BY JEG
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane *	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane *	ND
	Chloroethane	ND		cis-1,3-Dichloropropene *	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
1	Trichlorofluoromethane	2 1		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane #	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene #	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropene	ND			
	trans-1,3-Dichloropropene	ND			

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PAGE 5

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Analytical Serv

Results by Sample

REPORT

LAB # 85-01-145

Continued From Above

SAMPLE ID well A

FRACTION OIE

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 01/25/85 13:30:00

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute

CORPORATION

PAGE 6
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Analytical Serv
Results by Sample

LAB # 85-01-145

SAMPLE ID well A

IR ACTION QIF TEST CODE CC 602 NAME EPA Method 602/GC
Date & Time Collected 01/25/85 13:30:00 Category

DATA FILE D DATE INJECTED 02/11/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,4-Dichlorobenzene	ND
	Toluene	ND		1,3-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,2-Dichlorobenzene	ND
	Chlorobenzene	ND			

NOTE TO READER: The maximum holding time for EPA Method 602 was exceeded for this sample. Results of resampling and analysis are reported in Lab #85-04-169.

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time from chromatogram.

All results reported in this report are only as otherwise specified.

ND = not detected at EPA detection limit of 100 ppb. (Federal Register, 12/3/79)

LABORATORY CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-01-145

SAMPLE ID well A

FRACTION 01B TEST CODE MID 4A NAME Conductance for RCRA

Date & Time Collected 01/25/85 13:30:00 Category

Parameter	Detn 1	Detn 2	Detn 3	Detn 4
MHD umhos	740	750	750	750

SAMPLE ID well A

FRACTION 01B TEST CODE PH 4 NAME pH for RCRA Groundwater

Date & Time Collected 01/25/85 13:30:00 Category

Parameter	Detn 1	Detn 2	Detn 3	Detn 4
pH Units	7.6	7.5	7.4	7.4

SAMPLE ID well A

FRACTION 01C TEST CODE TOC 4 NAME TOC for RCRA Groundwater

Date & Time Collected 01/25/85 13:30:00 Category

Parameter	Detn 1	Detn 2	Detn 3	Detn 4
TOC mg/L	<1	<1	<1	<1

SAMPLE ID well A

FRACTION 01D TEST CODE TOX 4 NAME TOX for RCRA Groundwater

Date & Time Collected 01/25/85 13:30:00 Category

Parameter	Detn 1	Detn 2	Detn 3	Detn 4
TOX mg/L	<1	<1	<1	<1

CORPORATION

PAGE 8
RECEIVED: 01/28/85

Analytical Serv
Results by Sample

REPORT

LAB # 85-01-145

SAMPLE ID well B

FRACTION Q2E

TEST CODE CC 601 NAME EPA Method 601/GC

Date & Time Collected 01/24/85 11:20:00

Category

DATA FILE	Q	DATE INJECTED	01/30/85	ANALYST	MCL	VERIFIED BY	JSG
CONC	FACTOR			INSTRUMENT	g	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	*	ND	
	Vinyl Chloride	ND		1,1,2-Trichloroethane	*	ND	
	Chloroethane	ND		cis-1,3-Dichloropropene	*	ND	
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethane	ND		1,1,2,2-Tetrachloroethane	#	ND	
	1,1-Dichloroethane	ND		Tetrachloroethylene	#	ND	
	trans-1,2-Dichloroethane	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

PAGE 9
RECEIVED: 01/28/85
Analytical Serv
Results by Sample

LAB # 85-01-145
Continued From Above

REPORT

SAMPLE ID well B
FRACTION 02E
TEST CODE CC 601
NAME EPA Method 601/GC
Date & Time Collected 01/24/85 11:20:00
Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in µg/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 10
RECEIVED: 01/28/85

Analytical Serv

REPORT

LAB # 85-01-145

Results by Sample

SAMPLE ID well B

FRACTION 02F

TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 01/24/85 11:20:00

Category

DATA FILE _____ D _____ ANALYST _____ RAA _____ VERIFIED BY JSE
CONC FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,4-Dichlorobenzene	ND
1	Toluene	4 ;	_____	1,3-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Chlorobenzene	ND ;			

NOTE TO READER: The maximum holding time for EPA Method 602 was exceeded for this sample. Results of resampling and analysis are reported in Lab #85-04-169.

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number of retention time on chromatogram
All results reported in _____ only unless otherwise specified
ND = not detected at EPA detection limit in _____ (Federal Register 12/3/79)

CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 85-01-145

SAMPLE ID well C

FRACTION 03F

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 01/24/85 14:30:00

Category

DATA FILE _____ G DATE INJECTED 01/30/85 ANALYST _____ MCL _____ VERIFIED BY JSG
 CONC FACTOR _____ INSTRUMENT _____ 9 COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane *	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane *	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene *	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane #	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene #	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	trans-1,3-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

CORPORATION

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Analytical Serv REPORT
Results by Sample LAB # 85-01-145
Continued From Above

SAMPLE ID well C

FRACTION 03E TEST CODE CC 601 NAME EPA Method 601/GC
Date & Time Collected 01/24/85 14:30:00 Category

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.
All results reported in ug/L unless otherwise specified.
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).
*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-01-145

SAMPLE ID well C

FRACTION 03F TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 01/24/85 14:30:00 Category

DATA FILE _____ D _____ ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,4-Dichlorobenzene	ND
1	Toluene	2	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND			

NOTE TO READER: The maximum holding time for EPA Method 602 was exceeded for this sample. Results of resampling and analysis are reported in Lab #85-04-169.

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number of detected peak in chromatogram
All results reported in this report are otherwise specified.
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79)

LABORATORY

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Analytical Serv
Results by Sample

REPORT

LAB # 85-01-145

SAMPLE ID well D

FRACTION 04E

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 01/25/85 09:30:00

Category

DATA FILE	DATE INJECTED	Q	ANALYST	RAA	COMPOUNDS DETECTED	VERIFIED BY
CONC. FACTOR	01/30/85	9	INSTRUMENT	9	Q	JSG
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT	
---	Chloromethane	ND	---	Trichloroethene	ND	
---	Bromomethane	ND	---	Dibromochloromethane *	ND	
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane *	ND	
---	Chloroethane	ND	---	cis-1,3-Dichloropropene *	ND	
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND	
---	Trichlorofluoromethane	ND	---	Bromoform	ND	
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane #	ND	
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene #	ND	
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND	
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND	
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND	
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND	
---	Carbon Tetrachloride	ND				
---	Bromodichloromethane	ND				
---	1,2-Dichloropropene	ND				
---	trans-1,3-Dichloropropene	ND				

LABORATORY CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-01-145

Continued From Above

SAMPLE ID well D

FRACTION 04E

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected 01/25/85 09:30:00

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/l unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

LABORATORY CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-01-145

SAMPLE ID well D

FRACTION Q4F TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 01/25/85 09:30:00

Category

DATA FILE D DATE INJECTED 02/12/85 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,4-Dichlorobenzene	ND
---	Toluene	ND	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND			

NOTE TO READER: The maximum holding time for EPA Method 602 was exceeded for this sample. Results of resampling and analysis are reported in Lab #85-04-169.

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in this report are based on the analysis specified

ND = not detected at EPA detection limit with GC (Federal Register, 12/2/79)

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-062

REPORT Radian

TO BL 4

Austin

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P O Box 9748

Austin, Texas 78756

ATTEN John Walters

ATTEN

PHONE (512) 454-4797

CONTACT CONDOVER

SAMPLES 15

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

WORK ID soil sites 11, 12, 17, 19

TAKEN IW

TRANS IW

TYPE

P.O. # 214-114-04-30

INV. # 5203

Organophosphate pesticides reported in ug/g. stds. run for diazinon, disulfoton, malathion & ethyl parathion. High DL due to high interferences. DLs for SOLO & 8020 were 10 ug/kg and 250 ug/kg, respectively. ug/kg = ug/kg.

Duplicate of report of 03/22/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an intererent present.

SAMPLE IDENTIFICATION

01	11A-1	
02	11A-2	
03	54-1	
04	54-2	
05	54-3	
06	17C-1	
07	17C-2	
08	17C-3	
09	19A-1	
10	19A-2	
11	19A-3	
12	19B-1	
13	19B-2	

Analytical Serv TEST CODES and NAMES used on this report

AS E	Silver, ICPEs	NI E	Nickel, ICPEs
AS GA	Arsenic, low level	ONG IR	Oil and Grease, Infrared
BA F	Barium, ICPEs	ORG P	Organophosphate pesticides
CD F	Cadmium, ICPEs	PU GA	Lead, low level
CH E	Chromium, ICPEs	PESTES	EPA 602 Pesticides by EC
CU E	Copper, ICPEs	PREP W	Special Digestion Method
PREP 40	Dry weight of solid sample	PREP X	Special Digestion Method
EX 502	Extraction only - 502B Herb	ST GA	Selenium, low level
EX 503	Extraction only - 603	SW8010	GC-REC'D Halog Vol - SW846
EX 100	Extraction Only	SW8020	GC-PID Arom Vol - SW846
LE F	Lead, ICPEs	LOCSD	LOC in solids
HERBES	Herbicides EC	ZN E	Zinc, ICPEs
MG EG	Mercury, Cold Vapor		

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-062

03/07/86 17:02:54

SAMPLE IDENTIFICATION

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CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-062

RESULTS BY TEST

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
AG E ug/ml		0.40 ug/g		<.20 ug/g	<.19 ug/g
AS GA ug/ml		1.6 ug/g		1.8 ug/g	1.5 ug/g
BA E ug/ml		48 ug/g		70 ug/g	110 ug/g
CD E ug/ml		0.28 ug/g		1.2 ug/g	2.3 ug/g
CR E ug/ml		5.5 ug/g		18 ug/g	28 ug/g
CU E ug/ml		3.5 ug/g		7.7 ug/g	12 ug/g
FE E ug/ml		5500 ug/g		6900 ug/g	7700 ug/g
HG CA ug/ml		0.17 ug/g		0.20 ug/g	0.21 ug/g
NI E ug/ml		3.3 ug/g		4.4 ug/g	6.1 ug/g
ONG IR mg/L	<10 ug/g	<10 ug/g		<10 ug/g	40 ug/g
PB CA ug/ml	1.5 ug/g	4.0 ug/g		33 ug/g	74 ug/g
PREP W date complete	02/12/85	02/12/85	02/12/85	02/12/85	02/12/85
PREP X date complete	02/20/85	02/20/85	02/20/85	02/20/85	02/20/85
SE GA ug/ml			<.18 ug/g	<.18 ug/g	<.18 ug/g

MINIMUM CORPORATION

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-02-062

TEST CODE default units	Sample 11 (entered units)	Sample 12 (entered units)	Sample 13 (entered units)	Sample 14 (entered units)	Sample 15 (entered units)
ONG_IR mg/L	<10 ug/g	<10 ug/g	<10 ug/g	<10 ug/g	<10 ug/g
PB_GA ug/ml	1.1 ug/g	35 ug/g	0.95 ug/g	0.99 ug/g	4.3 ug/g
PREP_W date complete	02/12/85	02/12/85	02/12/85	02/12/85	02/12/85
PREP_X date complete	02/20/85	02/20/85	02/20/85	02/20/85	02/20/85

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-062

SAMPLE ID 11A-1

FRACTION Q1A

TEST CODE SUB010

NAME GC-HECD Halog Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
---	Chloromethane	ND	---	Trichloroethene	ND		
---	Bromomethane	ND	---	Dibromochloromethane	ND		
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND		
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND		
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND		
---	Trichlorofluoromethane	ND	---	Bromoform	ND		
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND		
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND		
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND		
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND		
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND		
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND		
---	Carbon tetrachloride	ND	---				
---	Bromodichloromethane	ND	---				
---	1,2-Dichloropropene	ND	---				
---	trans-1,3-Dichloropropene	ND	---				

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

Continued From Above

SAMPLE ID 11A-1

FRACTION 01A TEST CODE SW8010

NAME GC-HECD Hslog Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-062

SAMPLE ID 11A-1

FRACTION 01A TEST CODE SWB020 NAME GC-PID Atom Vol. - SWB46

Date & Time Collected 01/14/85

Category

DATA FILE _____ D _____ ANALYST _____ MCL _____ VERIFIED BY JEG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN - scan number or retention time on chromatogram.

All results reported in sample by name & otherwise specified.

ND - not detected at detection limit of 1 ug/g unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 11A-2

FRACTION 02A
Date & Time Collected 01/14/85

TEST CODE SW8010 NAME GC-HECD Hslog Vol. - SW846
Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

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SAMPLE ID 11A-2

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Hsloq. Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 11A-2

FRACTION 02A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 01/14/85 Category

DATA FILE _____ D _____ DATE INJECTED 02/22/85 ANALYST _____ MCL _____ VERIFIED BY JEG
CONC. FACTOR _____ INSTRUMENT 4 COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND ;	—	1,3-Dichlorobenzene	ND
—	Toluene	ND ;	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND ;	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID St-1

FRACTION 03A
Date & Time Collected 01/14/85

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SWB46
Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	MCL	VERIFIED BY	JSC
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

Continued From Above

SAMPLE ID St-1

FRACTION 03A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID St-1 FRACTION 03A TEST CODE SW2020 NAME GC-PID Atom. Vol. - SW846
Date & Time Collected 01/14/85 Category

DATA FILE _____ D _____ ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in _____ ug/Kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/Kg unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID St-2

FRACTION Q4A

TEST CODE SN8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethane	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

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SAMPLE ID St-2

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-062

-Results by Sample

SAMPLE ID St-2

FRACTION 04A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE _____ A _____ DATE INJECTED 02/22/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ 3 _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in _____ ug/kg unless otherwise specified
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID St-3 FRACTION 05A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 01/14/85 Category

DATA FILE CONC. FACTOR	A	DATE INJECTED 02/13/85	ANALYST INSTRUMENT	RAA a	VERIFIED BY JSG COMPOUNDS DETECTED C
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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Results by Sample

REPORT

LAB # 85-02-062

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SAMPLE ID St-3

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-02-062

SAMPLE ID St-3

FRACTION 05A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE _____ D _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified

ND = not detected at detection limit of 1 ug/g unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 17C-1

FRACTION 06C TEST CODE HERBES NAME Herbicides EC

Date & Time Collected 01/14/85 Category

DATE EXTRACTED	02/22/85	DATE INJECTED	03/08/85	VERIFIED BY	MSF
CONCENTRATION FACTOR		ANALYST	LHL		
COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	ND	50			
2,4,5-TP (Silvex)	ND	50			
2,4,5-T	ND	50			

NOTES AND DEFINITIONS FOR THIS REPORT.

ND = not detected at the specified detection limit.
All results reported in ug/kg unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID 17C-1

FRACTION 06C

TEST CODE DRG P

NAME Organophosphate pesticides

Date & Time Collected 01/14/85

Category

DATE EXTRACTED 02/22/85
CONCENTRATION FACTOR

DATE INJECTED 03/06/85
ANALYST MSF

VERIFIED BY MSF

PESTICIDE	RESULT	DET. LIMIT
Diazinon	ND	0.1
Dimeton	ND	0.1
Disulfoton	ND	0.1
Fenthion	ND	0.1
Naled	ND	0.1
Methyl Parathion	ND	0.1
Guthion	ND	0.1
EPN	ND	0.1
Malathion	ND	0.1

NOTES AND DEFINITIONS FOR THIS REPORT:

ND = not detected at the specified detection limit.
All results reported in micrograms/liter unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID 17C-1

FRACTION 06C TEST CODE PESIES NAME EPA 608 Pesticides by EC
Date & Time Collected 01/14/85 Category

DATA FILE 23503046

DATE EXTRACTED 02/22/85
DATE INJECTED 03/04/85

ANALYST LHL

VERIFIED BY MSF
COMPOUNDS DETECTED 3

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	29ug/k	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	25ug/k	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	7ug/kg	19P	107P	PCB-1254	ND
11P	95P	endosulfan-I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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REPORT

LAB # 85-02-062

Results by Sample

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SAMPLE ID 17C-1

FRACTION 06C

TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

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Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 17C-1

FRACTION 06A
Date & Time Collected 01/14/85

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

Continued From Above

SAMPLE ID 17C-1

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 17C-1

FRACTION 06A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/22/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSB
COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID 17C-2

FRACTION 07C TEST CODE HERBES
Date & Time Collected 01/14/85

NAME Herbicides EC
Category

DATE EXTRACTED 02/22/85
CONCENTRATION FACTOR

DATE INJECTED 03/08/85
ANALYST LIL

VERIFIED BY MSF

COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	ND	50			
2,4,5-TP (Silvex)	ND	50			
2,4,5-T	ND	50			

NOTES AND DEFINITIONS FOR THIS REPORT
ND = not detected at the specified detection limit.
All results reported in ug/kg unless otherwise specified.

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 17C-2

FRACTION 07C

TEST CODE ORG P

NAME Organophosphate pesticides

Date & Time Collected 01/14/85

Category

DATE EXTRACTED 02/22/85

DATE INJECTED 03/06/85

VERIFIED BY MSF

CONCENTRATION FACTOR

ANALYST MSF

PESTICIDE	RESULT	DET. LIMIT
Diazinon	ND	0.1
Dimeton	ND	0.1
Disulfoton	ND	0.1
Fenthion	ND	0.1
Naled	ND	0.1
Methyl Parathion	ND	0.1
Guthion	ND	0.1
EPN	ND	0.1
Malathion	ND	0.1

NOTES AND DEFINITIONS FOR THIS REPORT.

ND = not detected at the specified detection limit.

All results reported in micrograms/liter unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID 17C-2

FRACTION 07C

TEST CODE PESTES NAME EPA 608 Pesticides by EC
Date & Time Collected 01/14/85 Category

DATA FILE 22503048
CONC. FACTOR

DATE EXTRACTED 02/22/85
DATE INJECTED 03/04/85

ANALYST LHL

VERIFIED BY MSF
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	17P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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REPORT

Results by Sample

LAB # 85-02-062

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SAMPLE ID 17C-2

FRACTION O/C TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 17C-2

FRACTION 0/A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	RAA	VERIFIED BY	JSC
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropane	ND					

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SAMPLE ID 17C-2

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Results by Sample

LAB # 85-02-062

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FRACTION 07A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 17C-2

FRACTION 07A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE : _____ D DATE INJECTED 02/22/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g}/\text{g}$ unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-062

SAMPLE ID 17C-3

FRACTION Q8C

TEST CODE HERBES

NAME Herbicides EC

Date & Time Collected 01/14/85

Category

DATE EXTRACTED 02/22/85

DATE INJECTED 03/08/85

VERIFIED BY MSF

CONCENTRATION FACTOR

ANALYST LHL

COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	406	50			
2,4,5-TP (Silvex)	ND	50			
2,4,5-T	ND	50			

NOTES AND DEFINITIONS FOR THIS REPORT.

ND = not detected at the specified detection limit.

All results reported in ug/kg unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-062

FRACTION Q8C

TEST CODE URG P

NAME Organophosphate pesticides

Date & Time Collected 01/14/85

Category

VERIFIED BY MSF

DATE EXTRACTED 02/22/85

DATE INJECTED 03/06/85

CONCENTRATION FACTOR

ANALYST MSF

DET. LIMIT

RESULT

PESTICIDE

ND

0.1

ND

0.1

Diazinon

ND

0.1

ND

0.1

Dimeton

ND

0.1

ND

0.1

Disulfoton

ND

0.1

ND

0.1

Fenthion

ND

0.1

ND

0.1

Naled

ND

0.1

ND

0.1

Methyl Parathion

ND

0.1

ND

0.1

Guthion

ND

0.1

ND

0.1

EPN

ND

0.1

ND

0.1

Malathion

NOTES AND DEFINITIONS FOR THIS REPORT.

ND = not detected at the specified detection limit.
All results reported in micrograms/liter unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID 17C-3

FRACTION OBC

TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 01/14/85

Category

DATA FILE - Z2503049
CONC. FACTOR

DATE EXTRACTED 02/22/85
DATE INJECTED 03/04/85

ANALYST

LHL

VERIFIED BY MSF
COMPOUNDS DETECTED 1

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	Bug/kg	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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SAMPLE ID 17C-3

Analytical Serv

REPORT

Results by Sample

LAB # 85-02-062

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FRACTION Q8C TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 17C-3

FRACTION Q8A
Date & Time Collected 01/14/85

TEST CODE SW8010
NAME GC-HECD Halog. Vol. - SW846

Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	RAA	VERIFIED BY	JSC
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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LAB # 85-02-062

Results by Sample

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SAMPLE ID 17C-3

FRACTION OBA

TEST CODE SWB010

NAME GC-HECD Hsloq. Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 17C-3

FRACTION 08A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/23/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/Kg}$ unless otherwise specified

ND = not detected at detection limit of $1 \mu\text{g/Kg}$, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 19A-1

FRACTION 09A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/18/84

Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	C
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

Continued From Above

SAMPLE ID 19A-1

FRACTION 09A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/18/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-062

SAMPLE ID 19A-1

FRACTION 09A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 12/18/84

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/23/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/Kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g/l}$ unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID 19A-2

FRACTION 10A

TEST CODE SW8010 NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected 12/18/84

Category

DATA FILE _____ A _____ DATE INJECTED 02/14/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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SAMPLE ID 19A-2

Analytical Serv
Results by Sample

LAB # 85-02-062
Continued From Above

FRACTION 10A TEST CODE SW8010 NAME GC-HECD Hsloq. Vol. - SW846
Date & Time Collected 12/18/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 19A-2

FRACTION 10A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 12/18/84

Category

DATA FILE _____ D DATE INJECTED 02/24/85 ANALYST _____ RAA VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND :	—	1,3-Dichlorobenzene	ND
—	Toluene	ND :	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND :	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 19A-3

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/18/84

Category

DATA FILE	A	DATE INJECTED	02/14/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethane	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethane	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

Results by Sample

LAB # 85-02-062

Continued From Above

SAMPLE ID 19A-3

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/18/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number, or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 19A-3

FRACTION 11A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 12/18/84 CategoryDATA FILE _____ D DATE INJECTED 02/24/85 ANALYST _____ RAA _____ VERIFIED BY JSC
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND ;	—	1,3-Dichlorobenzene	ND
—	Toluene	ND ;	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND ;	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in $\mu\text{g}/\text{Kg}$ unless otherwise specified.ND = not detected at detection limit of 1 $\mu\text{g}/\text{Kg}$ unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 19B-1

FRACTION 12A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/19/84

Category

DATA FILE _____ A _____ DATE INJECTED 02/14/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

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REPORT

Results by Sample

LAB # 85-02-062

Continued From Above

SAMPLE ID 198-1

FRACTION 12A

TEST CODE SW8010

NAME GC-HECD H3log. Vol. - SWB46

Date & Time Collected 12/19/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 19B-1

FRACTION 12A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 12/19/84

Category

DATA FILE _____ D _____ DATE INJECTED 02/24/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in _____ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID 19B-2

FRACTION 13A

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/19/84

Category

DATA FILE	A	DATE INJECTED	02/14/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

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SAMPLE ID 198-2

FRACTION 13A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/19/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

SAMPLE ID 198-2

FRACTION 13A

TEST CODE SW8020

NAME GC-PID Arom Vol. - SW846

Date & Time Collected 12/19/84

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/24/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g}/\text{l}$ unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-052

Results by Sample

SAMPLE ID 198-3

FRACTION 14A

TEST CODE SW8010

NAME GC-HECD Hsloq. Vol. - SW846

Date & Time Collected 12/19/84

Category

DATA FILE	A	DATE INJECTED	02/14/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 198-3

Analytical Serv

REPORT

Results by Sample

LAB # 85-02-062

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FRACTION 14A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 12/19/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-062

SAMPLE ID 19B-3

FRACTION 14A TEST CODE SW8020
Date & Time Collected 12/19/84

NAME GC-PID Arom. Vol. - SW846

Category

DATA FILE : _____
CONC. FACTOR : _____

DATE INJECTED 02/24/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSC
COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in _____ ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-062

SAMPLE ID QA-1

FRACTION 15A

TEST CODE SWB010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE	A	DATE INJECTED	02/14/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-062

Results by Sample

Continued From Above

SAMPLE ID QA-1

FRACTION 15A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-062

SAMPLE ID QA-1

FRACTION 15A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/14/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/24/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND	—	1,3-Dichlorobenzene	ND
—	Toluene	ND	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified

ND = Not detected at detection limit of $1 \mu\text{g}/\text{l}$ unless otherwise specified.

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RECEIVED: 02/15/85

Analytical Serv

REPORT

LAB # 85-02-090

03/07/86 17:10:12

REPORT Radian
TO BL 4
Austin

ATTEN Toby Walters

CLIENT CANNON AFB
COMPANY Cannon AFB
FACILITY
SAMPLES 25

WORK ID soil, sites 2, 9, 11, 15
TAKEN WB
TRANS TW
TYPE

P.O. # 214-114-04-30
INVOICE under separate cover

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd
P.O. Box 994B
Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Note: Detection limit for SW8010 and SW8020 were 10 ug/Kg and 250 ug/Kg, respectively.

Duplicate of report of 04/30/85.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	2A-1	
02	2A-2	
03	2B-1	
04	2B-2	
05	2C-1	
06	2C-2	
07	2D-1	
08	2D-2	
09	2E-1	
10	2E-2	
11	9A-1	
12	9A-2	
13	9B-1	
14	9B-2	
15	9B-3	

Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPE	SW8020 GC-PID Arom	Vol. - SW844
AS CA	Arsenic, low level	TOCSOL	IOC in solids
BA E	Barium, ICPE	ZN E	Zinc, ICPE
CD E	Cadmium, ICPE		
CR E	Chromium, ICPE		
CU E	Copper, ICPE		
FE E	Iron, ICPE		
MG CA	Mercury, Cold Vapor		
Ni E	Nickel, ICPE		
ONG IR	Oil and Grease, Infrared		
PB CA	Lead, low level		
PREP W	Special Digestion Method		
PREP A	Special Digestion Method		
SE CA	Selenium, low level		
SW8010	GC/MSD Halog	Vol. - SW844	

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Analytical Serv

REPORT

03/07/86 17:10:12

LAB # 85-02-090

SAMPLE IDENTIFICATION

16	11B-1	
17	11B-2	
18	11B-3	
19	15A-1	
20	15A-2	
21	15A-3	
22	15B-1	
23	15B-2	
24	15B-3	
25	2E-3	

RECEIVED: 02/15/85

RESULTS BY TEST

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG_E	1.0	<.20	0.72	0.66	<.20
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS_GA	1.6	1.3	1.1	3.7	4.0
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA_E	89	80	74	580	79
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD_E	0.50	<.20	0.57	0.43	0.27
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR_E	9.5	7.1	6.4	4.1	7.9
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CU_E	5.3	4.0	3.6	5.0	5.8
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
FE_E	9100	6800	4500	2500	8000
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
HG_GA	0.13	<.05	0.08	0.21	0.10
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
NI_E	7.5	4.7	4.1	3.3	8.4
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
ONG_IR	<10	<10	<10	<10	<10
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB_GA	7.4	5.2	3.3	1.3	6.4
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
PREP_W	02/26/85	02/26/85	02/26/85	02/26/85	02/26/85
date complete					
PREP_X	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
date complete					
SE_GA	<.2	<.2	<.2	<.2	1.6
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

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Analytical Serv

REPORT

LAB # 85-02-090

RESULTS BY TEST

CONTINUED FROM ABOVE

TOCSOL	0.36	0.29	0.05	5.39	0.24
%					
ZN E	25	16	38	36	68
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 06	Sample 07	Sample 08	Sample 09	Sample 10
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	1.2	0.58	0.57	0.38	0.55
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS GA	1.5	1.5	11	0.74	0.81
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA E	320	100	89	110	66
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD E	<.20	0.34	<.20	0.40	0.48
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR E	5.8	8.3	3.5	7.8	7.4
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CU E	2.4	6.3	0.79	7.5	5.7
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
FE E	4500	7800	2100	8700	6900
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
HG CA	0.017	0.035	0.083	0.068	0.13
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
NI E	3.6	7.7	1.7	5.8	7.7
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
ONG IR	<10	<10	26	<10	<10
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB CA	3.7	7.0	1.9	10	7.5
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

AD-A175 325

INSTALLATION RESTORATION PROGRAM PHASE II

2/9

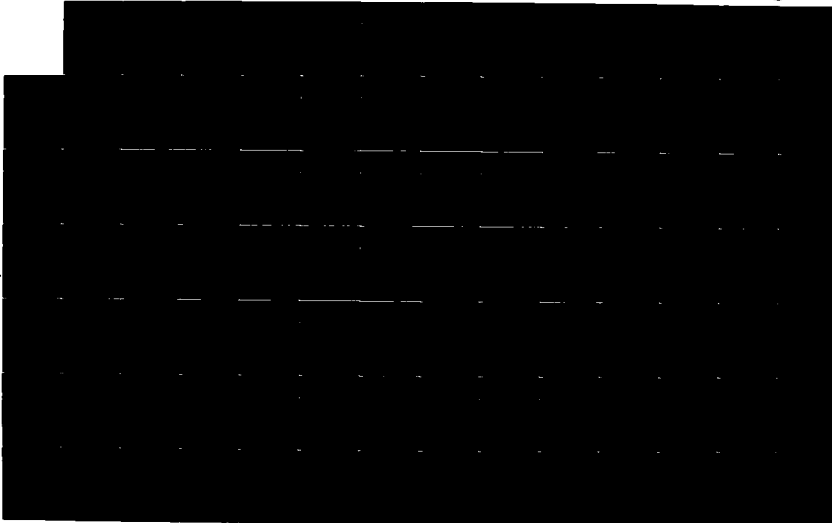
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

CORPORATION

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Analytical Serv
RESULTS BY TEST

LAB # 85-02-090
CONTINUED FROM ABOVE

PREP W	02/26/85	02/26/85	02/26/85	02/26/85
date complete				
PREP X	03/01/85	03/01/85	03/01/85	03/01/85
date complete				
SE GA	<2	<2	<2	<2
ug/ml	ug/g	ug/g	ug/g	ug/g
TCSOL	0.04	0.30	0.10	0.19
%				
ZN E	61	61	19	57
ug/ml	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 11	Sample 12	Sample 13	Sample 14	Sample 15
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
ONG IR	<10	110	<10	<10	37
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB GA	4.1	39	4.5	3.7	1.3
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
PREP W	02/26/85	02/26/85	02/26/85	02/26/85	02/26/85
date complete					
PREP X	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
date complete					

TEST CODE	Sample 16	Sample 17	Sample 18	Sample 19	Sample 20
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
ONG IR	<10	<10	<10	<10	<10
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB GA	4.8	2.0	2.0	5.8	2.4
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

CORPORATION

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Analytical Serv REPORT
RESULTS BY TEST

LAB # 85-02-090
CONTINUED FROM ABOVE

PREP_W	02/26/85	02/26/85	02/26/85
date complete			
PREP_X	03/01/85	03/01/85	03/01/85
date complete			

TEST CODE	Sample 21	Sample 22	Sample 23	Sample 24	Sample 25
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)

AG E					0.35 ug/g
AS GA					<2 ug/g
BA E					45 ug/g
CD E					0.39 ug/g
CR E					3.1 ug/g
CU E					0.81 ug/g
FE E					2100 ug/g
HG CA					0.065 ug/g
NI E					0.96 ug/g
ONG IR					<10 ug/g
mg/L					<10 ug/g
PB GA					1.2 ug/g
ug/ml					0.90 ug/g

CORPORATION

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-02-090

CONTINUED FROM ABOVE

PREP_W	02/26/85	02/26/85	02/26/85
date complete			
PREP_X	03/01/85	03/01/85	03/01/85
date complete			
SE_GA			<.2
ug/ml			ug/g
TOCSOL			0.06
%			
ZN_E			5.2
ug/ml			ug/g

CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 2A-1

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD H₂log. Vol. - SWB46

Date & Time Collected 01/23/85

Category

DATA FILE	A	DATE INJECTED	02/18/85	ANALYST	CAC	VERIFIED BY	JSC
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-090

Continued From Above

SAMPLE ID 2A-1

FRACTION 01A

TEST CODE SW2010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/23/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT
Results by Sample

LAB # 85-02-090

SAMPLE ID 2A-1

FRACTION 01A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 01/23/85 Category

DATA FILE : _____ D _____
CONC. FACTOR : _____

DATE INJECTED 02/24/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in _____ unless otherwise specified.
ND = not detected at detection limit of 1 ug/k unless otherwise specified.

INCORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-090

SAMPLE ID 2A-2

FRACTION 02A
Date & Time Collected 01/23/85

NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE: A
CONC. FACTOR

DATE INJECTED 02/18/85

ANALYST
INSTRUMENT

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,2-Dichloropropane	ND			

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Analytical Serv

REPORT

LAB # 85-02-090

Results by Sample

Continued From Above

SAMPLE ID 2A-2

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/23/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 2A-2

FRACTION 02A TEST CODE SWB020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 01/23/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

MCL

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in $\mu\text{g/kg}$ unless otherwise specified

ND = not detected at detection limit of 1 $\mu\text{g/kg}$ unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-090

SAMPLE ID 28-1 FRACTION 03A TEST CODE SW8010 NAME GC-HECD H₂Log Vol. - SW846
Date & Time Collected 01/23/85 Category

DATA FILE	A	DATE INJECTED	02/18/85	ANALYST	CAC	VERIFIED BY	JSG
CONC	FACTOR			INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethene	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

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SAMPLE ID 28-1

FRACTION Q3A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/23/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 2B-1

FRACTION 03A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 01/23/85 Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in $\mu\text{g/g}$ unless otherwise specified

ND = not detected at detection limit of 1 $\mu\text{g/g}$ unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 2B-2

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/23/85

Category

DATA FILE	A	DATE INJECTED	02/13/85	ANALYST	CAC	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
---	Chloromethane	ND	---	Trichloroethene	ND		
---	Bromomethane	ND	---	Dibromochloromethane	ND		
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND		
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND		
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND		
---	Trichlorofluoromethane	ND	---	Bromoform	ND		
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND		
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND		
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND		
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND		
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND		
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND		
---	Carbon Tetrachloride	ND	---				
---	Bromodichloromethane	ND	---				
---	1,2-Dichloropropene	ND	---				
---	trans-1,3-Dichloropropene	ND	---				

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Results by Sample

REPORT

LAB # 85-02-090

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SAMPLE ID 28-2

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/23/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 28-2

FRACTION 04A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/23/85

Category

DATA FILE

D

DATE INJECTED 02/25/85

CONC. FACTOR

ANALYST

MCL

VERIFIED BY JSG

COMPOUNDS DETECTED

d

C

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified

ND = not detected at detection limit of $1 \mu\text{g}/\text{kg}$, unless otherwise specified

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 2C-1

FRACTION 05A

TEST CODE SW2010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/24/85

Category

DATA FILE	A	DATE INJECTED	02/18/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethene	ND		1,4-Dichlorobenzene	ND		
	Carbon tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-090

Results by Sample

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SAMPLE ID 2C-1

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/24/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-090

SAMPLE ID 2C-1

FRACTION 05A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 01/24/85

Category

DATA FILE _____ D _____
CONC FACTOR _____

DATE INJECTED 02/25/85

ANALYST _____
INSTRUMENT _____

MCL _____

VERIFIED BY JSR
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND :	---	1,3-Dichlorobenzene	ND
---	Toluene	ND :	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND :	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in micrograms unless otherwise specified.

ND = Not detected or detection limit of 1 ug/g unless otherwise specified.

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 2C-2

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/24/85

Category

DATA FILE _____ A _____ DATE INJECTED 02/18/85 ANALYST _____ RAA _____ VERIFIED BY JSC
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

LAB # 85-02-090

Results by Sample

Continued From Above

SAMPLE ID 2C-2

FRACTION 06A

TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 01/24/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 2C-2

FRACTION 06A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846

Date & Time Collected 01/24/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

COMPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 2D-1

FRACTION 07A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE	A	DATE INJECTED	02/18/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

LABORATORY

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Analytical Serv

REPORT

LAB # 85-02-090

Results by Sample

Continued From Above

SAMPLE ID 20-1

FRACTION O/A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

WATKINS CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 2D-1

FRACTION 07A

TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSC
COMPOUNDS DETECTED

d

Q

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in this report unless otherwise specified.

ND = Not detected at detection limit of 1 ug/l unless otherwise specified.

LABORATORY

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Analytical Serv
Results by Sample

LAB # 85-02-090

REPORT

SAMPLE ID 2D-2

FRACTION 08A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/25/85

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 02/19/85

ANALYST
INSTRUMENT

RAA
a

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

**ANALYTICAL
CORPORATION**

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SAMPLE ID 2D-2

Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

Continued From Above

SAMPLE ID 2D-2

FRACTION 08A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

ANALYTICAL SERVICE CORPORATION

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 SAMPLE ID 2D-2
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 85-02-090
 FRACTION Q8A
 TEST CODE SW8020
 NAME GC-PID Arom. Vol. - SW846
 Date & Time Collected 01/25/85
 Category

DATA FILE _____ D _____
 CONC. FACTOR _____
 DATE INJECTED 02/25/85
 ANALYST _____
 INSTRUMENT _____
 MOI _____
 VERIFIED BY JSG
 COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT
 SCAN = scan number or retention time on chromatogram.
 All results reported in $\mu\text{g/g}$ unless otherwise specified.
 ND = not detected at detection limit of 1 $\mu\text{g/g}$, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 2E-1

FRACTION 09A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE

A

DATE INJECTED 02/18/85

ANALYST

RAA

VERIFIED BY JSC

CONC. FACTOR

a

INSTRUMENT

COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropene	ND			
	trans-1,3-Dichloropropene	ND			

INCORPORATION

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REPORT

Results by Sample

LAB # 85-02-090

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SAMPLE ID 2E-1

FRACTION 09A

TEST CODE SWB010

NAME GC-HECD Halog Vol. - SWB46

Date & Time Collected 01/26/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

ANALYTICAL SERVICES CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 2E-1

FRACTION 09A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time from chromatogram

All results reported in this report unless otherwise specified.

ND = not detected at detection limit of 1.0 µg/g unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 2E-2

FRACTION 10A

TEST CODE SW8010

NAME GC-HECD Halog Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 02/17/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

**LABORATORY
CORPORATION**

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REPORT

LAB # 85-03-090

Results by Sample

Continued From Above

SAMPLE ID 2E-2

FRACTION 10A

TEST CODE SWB010

NAME GC-HECD Hslog. Vol. - SWB46

Date & Time Collected 01/26/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

WATERMANN CORPORATION

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REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 2E-2

FRACTION 10A

TEST CODE SW8020

NAME GC-PID

Arom.

Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE
CONC. FACTOR

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/kg unless otherwise specified

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 9A-1

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/22/85

Category

DATA FILE	B	DATE INJECTED	ANALYST	INSTRUMENT	MSF	VERIFIED BY	COMPOUNDS DETECTED
CONC. FACTOR		02/19/85			b	JSG	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT	SCAN	COMPOUND
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

LABORATORY

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REPORT

LAB # 85-02-090

Results by Sample

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SAMPLE ID 9A-1

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Hslog Vol. - SW846

Date & Time Collected 01/22/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 9A-1

FRACTION 11A

TEST CODE SW8020

NAME GC-PID

Atom Vol. - SW846

Date & Time Collected 01/22/85

Category

DATA FILE
CONC FACTOR

D

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram

All results reported in this report are otherwise specified

ND = not detected at detection limit of 100% unless otherwise specified

LABORATORY

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 9A-2

FRACTION 12A
Date & Time Collected 01/22/85

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE	A	DATE INJECTED	02/19/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	2	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 9A-2

Analytical Serv

REPORT

Results by Sample

LAB # 85-03-090

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FRACTION 12A

TEST CODE SW8010

NAME GC-HECD Hslog Vol. - SW846

Date & Time Collected 01/22/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in. ug/kg unless otherwise specified.

ND = not detected at detection limit. of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-090

SAMPLE ID 9A-2

FRACTION 12A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846
Date & Time Collected 01/22/85 Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/25/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DETAILING TO THE REPORT
SCAN = scan number of detected compound from chromatogram
All results reported in this report are based on the specified
ND = not detected or detected in amount less than specified

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Analytical Serv

REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 9B-1

FRACTION 13A

TEST CODE SUB010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/22/85

Category

DATA FILE	DATE INJECTED	ANALYST	MSF	VERIFIED BY	
CONC. FACTOR	02/19/87	INSTRUMENT	b	0	
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	trans-Dichloropropene	ND			
	trans-1,2-Dichloropropene	ND			

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Analytical Serv

Results by Sample

LAB # 85-02-090

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SAMPLE ID 9B-1

FRACTION 13A

TEST CODE SW8010

NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected 01/22/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 9B-1

FRACTION 13A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 01/22/85

Category

DATA FILE _____ D _____ ANALYST _____ RAA _____ VERIFIED BY JSG
CONC FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = Scan number or retention time on chromatogram.

All results reported in ppm unless otherwise specified.

ND = Not detected at detection limit of 1 µg/l unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 9B-2

FRACTION 14A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/22/85

Category

DATA FILE	A	DATE INJECTED	02/19/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,2-Dichloropropene	ND					

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REPORT

Results by Sample

LAB # 85-02-090

Continued From Above

SAMPLE ID 98-2

FRACTION 14A

TEST CODE SW8010

NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected 01/22/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-090

SAMPLE ID 9B-2

FRACTION 14A TEST CODE SW8020
Date & Time Collected 01/22/85

NAME GC-PID Arom Vol. - SW846
Category

DATA FILE
CONC. FACTOR

DATE INJECTED 02/25/85

D

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND ;		1,3-Dichlorobenzene	ND
	Toluene	ND ;		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND ;		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in this report are unless otherwise specified

ND = not detected at detection limit of 1 ug/l, unless otherwise specified

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 98-3

FRACTION 15A

TEST CODE SW8010

NAME GC-HECD H₂log. Vol. - SW846

Date & Time Collected 01/22/85

Category

DATA FILE	A	DATE INJECTED	02/17/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	2	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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SAMPLE ID 98-3

Analytical Serv

Results by Sample

REPORT

LAB # 85-02-090

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FRACTION 15A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 01/22/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-03-090

Results by Sample

SAMPLE ID 98-3

FRACTION 15A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/22/85

Category

DATA FILE _____ D _____ DATE INJECTED 02/25/85 ANALYST _____ RAA _____ VERIFIED BY JSC
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN - Scan number or retention time on chromatogram
All results reported in _____ unless otherwise specified
ND = Not detected at detection limit of 1 ng/l unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 11B-1

FRACTION 16A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/20/85

Category

DATA FILE _____
CONC. FACTOR _____

B DATE INJECTED 02/19/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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Results by Sample

LAB # 85-02-090

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SAMPLE ID 11B-1

FRACTION 16A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/20/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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 Results by Sample
 REPORT
 LAB # 85-02-090
 FRACTION 16A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
 Date & Time Collected 01/20/85 Category

DATA FILE _____ D _____ DATE INJECTED 02/25/85 ANALYST _____ RAA _____ VERIFIED BY JSG
 CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT
 SCAN = scan number or retention time on chromatogram.
 All results reported in $\mu\text{g/g}$ unless otherwise specified.
 ND = not detected at detection limit of 1 $\mu\text{g/g}$, unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-02-090

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SAMPLE ID 11B-2

FRACTION 17A

TEST CODE SW8010

NAME GC-HECD Hslog. Vol. - SW846

Date & Time Collected 01/20/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY

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REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 11B-2

FRACTION 17A TEST CODE SW2020 NAME GC-FID Atom Vol - SW846

Date & Time Collected 01/20/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in $\mu\text{g/g}$ unless otherwise specified

ND = Not detected at detection limit of 1 $\mu\text{g/g}$ unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 11B-3

FRACTION 18A

TEST CODE SW8010

NAME GC-HECD Helog. Vol. - SW846

Date & Time Collected 01/20/85

Category

DATA FILE
CONC. FACTOR

G

DATE INJECTED 02/19/85

ANALYST
INSTRUMENT

MSF

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

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REPORT

LAB # 85-02-090

Results by Sample

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SAMPLE ID 11B-3

FRACTION 18A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 01/20/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY

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REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 11B-3

FRACTION 18A

TEST CODE SW8020

NAME GC-PID AROM. Vol. - SW846

Date & Time Collected 01/20/85

Category

DATA FILE _____ D _____ DATE INJECTED 02/26/85 ANALYST _____ MCL _____ VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified
ND = not detected at detection limit of 1 $\mu\text{g}/\text{kg}$, unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 15A-1

FRACTION 19A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE	B	DATE INJECTED	02/19/85	ANALYST	MSF	VERIFIED BY	USG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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LAB # 85-02-090

Results by Sample

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SAMPLE ID 15A-1

FRACTION 19A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/26/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 15A-1

FRACTION 19A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE _____ D _____
CONC. FACTOR _____

DATE INJECTED 02/26/85

ANALYST _____ MCL _____
INSTRUMENT _____ d _____

VERIFIED BY JSG
COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in _____ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 15A-2

FRACTION 20A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/18/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSJ
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1, 1, 2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1, 3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1, 1-Dichloroethene	ND	_____	1, 1, 2, 2-Tetrachloroethane	ND
_____	1, 1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1, 2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1, 3-Dichlorobenzene	ND
_____	1, 2-Dichloroethane	ND	_____	1, 2-Dichlorobenzene	ND
_____	1, 1, 1-Trichloroethane	ND	_____	1, 4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1, 2-Dichloropropane	ND			
_____	trans-1, 3-Dichloropropene	ND			

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REPORT

LAB # 85-02-090

Results by Sample

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SAMPLE ID 15A-2

FRACTION 20A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/26/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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LAB # 85-02-090

Results by Sample

SAMPLE ID 15A-2

FRACTION 20A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE _____ D _____ DATE INJECTED 02/26/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	_____ ND _____	_____	1,3-Dichlorobenzene	_____ ND _____
_____	Toluene	_____ ND _____	_____	1,2-Dichlorobenzene	_____ ND _____
_____	Ethyl Benzene	_____ ND _____	_____	1,4-Dichlorobenzene	_____ ND _____

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in _____ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-02-090

SAMPLE ID 15A-3

FRACTION 21A

TEST CODE SW8010

NAME GC-HECD Halog Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/18/85

ANALYST _____
INSTRUMENT _____

RAA _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,3-Dichloropropene	ND			

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LAB # 85-02-090

Results by Sample

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SAMPLE ID 15A-3

FRACTION 21A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/26/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 15A-3

FRACTION 21A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE _____ D _____ DATE INJECTED 02/26/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.

All results reported in _____ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg unless otherwise specified.

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REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 15B-1

FRACTION 22A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/27/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/18/85

ANALYST _____

VERIFIED BY JSB

INSTRUMENT _____

COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethane	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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Results by Sample

LAB # 85-02-090

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FRACTION 22A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/27/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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LAB # 85-02-090

Results by Sample

SAMPLE ID 158-1

FRACTION 22A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 01/27/85 Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/26/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSC
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND ;	—	1,3-Dichlorobenzene	ND
—	Toluene	ND ;	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND ;	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/Kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-090

SAMPLE ID 15B-2

FRACTION 23A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/27/85

Category

DATA FILE

G

DATE INJECTED 02/18/85

ANALYST

RAA

VERIFIED BY JSG

CONC. FACTOR

Q

INSTRUMENT

Q

COMPOUNDS DETECTED

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Chloromethane ND

Trichloroethene ND

Bromomethane ND

Dibromochloromethane ND

Vinyl Chloride ND

1,1,2-Trichloroethane ND

Chloroethane ND

cis-1,3-Dichloropropene ND

Methylene Chloride ND

2-Chloroethylvinyl Ether ND

Trichlorofluoromethane ND

Bromoform ND

1,1-Dichloroethene ND

1,1,2,2-Tetrachloroethane ND

1,1-Dichloroethane ND

Tetrachloroethylene ND

trans-1,2-Dichloroethene ND

Chlorobenzene ND

Chloroform ND

1,3-Dichlorobenzene ND

1,2-Dichloroethane ND

1,2-Dichlorobenzene ND

1,1,1-Trichloroethane ND

1,4-Dichlorobenzene ND

Carbon Tetrachloride ND

Bromodichloromethane ND

1,2-Dichloropropane ND

trans-1,3-Dichloropropene ND

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Results by Sample

LAB # 85-02-090

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SAMPLE ID 15B-2

FRACTION 23A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 01/27/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-090

SAMPLE ID 158-2

FRACTION 23A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 01/27/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/25/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND ;

1,3-Dichlorobenzene

ND

Toluene

ND ;

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND ;

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/g}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g/g}$ unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-090

SAMPLE ID 158-3

FRACTION 24A
Date & Time Collected 01/27/85

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE	G	DATE INJECTED	02/18/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	g	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-02-090

Results by Sample

Continued From Above

SAMPLE ID 15B-3

FRACTION 24A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/27/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-090

SAMPLE ID 158-3

FRACTION 24A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/27/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/26/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN -- scan number or retention time on chromatogram.
All results reported in $\mu\text{g/Kg}$ unless otherwise specified.
ND = not detected at detection limit of 1 $\mu\text{g/Kg}$, unless otherwise specified.

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REPORT

LAB # 85-02-090

Results by Sample

SAMPLE ID 2E-3

FRACTION 25A

TEST CODE SW8010

NAME GC-HECD H₂log. Vol. - SW846

Date & Time Collected 01/26/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/18/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

LAB # 85-02-090

Results by Sample

Continued From Above

SAMPLE ID 2E-3

FRACTION 25A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/26/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-090

SAMPLE ID 2E-3

FRACTION 25A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 01/26/85 Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/26/85

ANALYST _____
INSTRUMENT _____
RAA _____
COMPOUNDS DETECTED _____
VERIFIED BY JSG _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in $\mu\text{g/g}$ unless otherwise specified.
ND = not detected at detection limit of 1 $\mu\text{g/g}$ unless otherwise specified.

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RECEIVED: 02/18/85

Analytical Serv

REPORT

LAB # 85-02-093

03/07/86 17:20:09

REPORT Radian

TO BL 4

Austin

ATTEN Toby Walters

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 17

WORK ID site 3 soil, 8010 & 8020

TAKEN DR

TRANS DR

TYPE

P.O. # 214-114-04-30

INV. # 5208

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P.O. Box 9748

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Note: Detection limits for SW8010 and SW8020 were 10 ug/Kg and 250 ug/Kg, respectively.

Duplicate of report of 03/18/85.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	3A-1
02	3A-2
03	3A-3
04	3B-1
05	3B-2
06	3B-3
07	3C-1
08	3C-2
09	3C-3
10	3D-1
11	3D-1a
12	3D-2
13	3D-3
14	3F-1
15	3F-2

Analytical Serv TEST CODES and NAMES used on this report

SW8010 GC-HECD Halog. Vol. - SW846

SW8020 GC-PID Arom. Vol. - SW846

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Analytical Serv

REPORT

03/07/86 17:20:09

LAB # 85-02-093

SAMPLE IDENTIFICATION

15	3F-2	_____
16	3F-3	_____
17	3G-1	_____
18	3G-2	_____
19	3G-3	_____

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RECEIVED: 02/18/85

Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 3A-1

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD Haloc. Vol. - SW846

Date & Time Collected 02/13/85

Category

DATA FILE	A	DATE INJECTED	02/21/85	ANALYST	CAC	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,2-Dichloropropene	ND					

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

Continued From Above

SAMPLE ID 3A-1

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD H₂log. Vol. - SW846

Date & Time Collected 02/13/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-093

SAMPLE ID 3A-1

FRACTION 01A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/13/85 Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 03/04/85

ANALYST _____ MCL _____
INSTRUMENT _____ d COMPOUNDS DETECTED 0

VERIFIED BY JSS

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 3A-2

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/13/85

Category

DATA FILE	A	DATE INJECTED	02/21/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	3	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3 Dichloropropene	ND					

CORPORATION

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SAMPLE ID 3A-2

Analytical Serv
Results by Sample

LAB # 85-02-093
Continued From Above

FRACTION 02A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 02/13/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 3A-2

FRACTION 02A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/13/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/04/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram
All results reported in $\mu\text{g/g}$ unless otherwise specified.
ND = not detected at detection limit of 1 $\mu\text{g/g}$ unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 3A-3

FRACTION 03A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/13/85

Category

DATA FILE	A	DATE INJECTED	02/21/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

LABORATORY CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-093

Continued From Above

SAMPLE ID 3A-3

FRACTION Q3A

TEST CODE SW8010

NAME GC-HECD Hsloq. Vol. - SW846

Date & Time Collected 02/13/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 3A-3

FRACTION 03A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/13/85 CategoryDATA FILE
CONC. FACTOR

D

DATE INJECTED 03/04/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND	—	1,3-Dichlorobenzene	ND
—	Toluene	ND	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 38-1

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 02/21/85

ANALYST

RAA

VERIFIED BY JSC

INSTRUMENT

a

COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,3-Dichloropropene	ND			

~~CORPORATION~~

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-093

Continued From Above

SAMPLE ID 3B-1

FRACTION 04A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-093

SAMPLE ID 3B-1

FRACTION 04A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE _____ D _____ DATE INJECTED 03/04/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in _____ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 3B-2

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE	A	DATE INJECTED	02/21/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample Continued From Above

SAMPLE ID 38-2

FRACTION 05A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 3B-2

FRACTION 05A

TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/04/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram

All results reported in ug/kg unless otherwise specified

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 38-3

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE	A	DATE INJECTED	02/21/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

AD-A175 325

INSTALLATION RESTORATION PROGRAM PHASE II

3/9

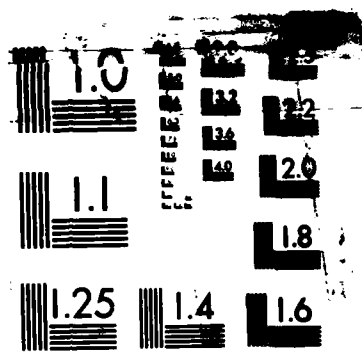
CONFIRMATION/QUANTIFICATION STA. (U) RADIAN CORP AUSTIN

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

~~CONFIDENTIAL~~
CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

Continued From Above

SAMPLE ID 38-3

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT
Results by Sample

LAB # 85-02-093

SAMPLE ID 3H-3

FRACTION 06A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846
Date & Time Collected 02/14/85 Category

DATA FILE _____ D DATE INJECTED 03/04/85 ANALYST _____ RAA _____ VERIFIED BY JSC
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND :	---	1,3-Dichlorobenzene	ND
---	Toluene	ND :	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND :	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/ unless otherwise specified.

COMPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 3C-1

FRACTION 07A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE _____ A _____ DATE INJECTED 02/21/85 ANALYST _____ RAA _____ VERIFIED BY JSC
 CONC. FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromofom	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

Continued From Above

SAMPLE ID 3C-1

FRACTION Q/A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 3C-1

FRACTION 0/A TEST CODE SWB020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE _____ D DATE INJECTED 03/04/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-093

SAMPLE ID 3C-2

FRACTION OBA

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE	A	DATE INJECTED	02/21/85	ANALYST	RAA	VERIFIED BY	USG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	C
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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LAB # 85-02-093

Results by Sample

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SAMPLE ID 3C-2

FRACTION 08A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-093

SAMPLE ID 3C-2

FRACTION 08A TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/04/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = Not detected at detection limit of 1 ug/kg unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 3C-3

FRACTION 09A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE	B	DATE INJECTED	02/21/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-02-093

Results by Sample

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SAMPLE ID 3C-3

FRACTION 09A

TEST CODE SW8010

NAME

GC-HECD H₂log. Vol. - SW846

Date & Time Collected 02/14/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-02-093

SAMPLE ID 3C-3

FRACTION 09A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/14/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 03/04/85

ANALYST _____
INSTRUMENT _____

RAA _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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LAB # 85-02-093

Results by Sample

SAMPLE ID 3D-1

FRACTION 10A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/16/85

Category

DATA FILE	A	DATE INJECTED	02/21/85	ANALYST	CAC	VERIFIED BY	JSJ
CONC	FACTOR			INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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Results by Sample

LAB # 85-02-093

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SAMPLE ID 3D-1

FRACTION 10A TEST CODE SW8010

NAME GC-HECD Halog Vol. - SW846

Date & Time Collected 02/16/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-093

SAMPLE ID 3D-1
FRACTION 10A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 02/16/85 Category

DATA FILE _____ D _____ DATE INJECTED 03/04/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____d _____ COMPOUNDS DETECTED _____C

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	_____ND_____	_____	1,3-Dichlorobenzene	_____ND_____
_____	Toluene	_____ND_____	_____	1,2-Dichlorobenzene	_____ND_____
_____	Ethyl Benzene	_____ND_____	_____	1,4-Dichlorobenzene	_____ND_____

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in _____ug/kg unless otherwise specified

ND = not detected at detection limit of 1 ug/ unless otherwise specified.

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Results by Sample

LAB # 85-02-093

SAMPLE ID 3D-1a

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/16/85

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 02/21/85

ANALYST
INSTRUMENT

CAC

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Chloromethane ND

Trichloroethane ND

Bromomethane ND

Dibromochloromethane ND

Vinyl Chloride ND

1,1,2-Trichloroethane ND

Chloroethane ND

cis-1,3-Dichloropropene ND

Methylene Chloride ND

2-Chloroethylvinyl Ether ND

Trichlorofluoromethane ND

Bromoform ND

1,1-Dichloroethane ND

1,1,2,2-Tetrachloroethane ND

1,1-Dichloroethane ND

Tetrachloroethylene ND

trans-1,2-Dichloroethene ND

Chlorobenzene ND

Chloroform ND

1,3-Dichlorobenzene ND

1,2-Dichloroethane ND

1,2-Dichlorobenzene ND

1,1,1-Trichloroethane ND

1,4-Dichlorobenzene ND

Carbon Tetrachloride ND

Bromodichloromethane ND

1,2-Dichloropropane ND

trans-1,3-Dichloropropene ND

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Results by Sample

REPORT

LAB # 85-02-093

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SAMPLE ID 3D-1a

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 02/16/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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 Results by Sample
 REPORT
 LAB # 85-02-093
 FRACTION 11A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846
 Date & Time Collected 02/16/85 Category

DATA FILE _____ D _____ DATE INJECTED 03/04/85 ANALYST _____ RAA _____ VERIFIED BY JSC
 CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/Kg unless otherwise specified.
 ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 3D-2 FRACTION 12A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 02/16/85 Category

DATA FILE	Q	DATE INJECTED	02/21/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	g	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-02-093

Results by Sample

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SAMPLE ID 3D-2

FRACTION 12A

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 02/16/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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LAB # 85-02-093

Results by Sample

SAMPLE ID 3D-2

FRACTION 12A TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/16/85

Category

DATA FILE D DATE INJECTED 03/04/85 ANALYST RAA VERIFIED BY JSQ
CONC. FACTOR 1 INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram
All results reported in ug/kg unless otherwise specified
ND = not detected at detection limit of 1 ug/l unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 3D-3

FRACTION 13A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/16/85

Category

DATA FILE	B	DATE INJECTED	02/22/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Results by Sample

LAB # 85-02-093

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SAMPLE ID 3D-3

FRACTION 13A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/16/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-093

SAMPLE ID 3D-3

FRACTION 13A TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/16/85

Category

DATA FILE _____ D _____ DATE INJECTED 03/05/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-093

SAMPLE ID 3F-1

FRACTION 14A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE	B	DATE INJECTED	02/21/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 3F-1

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Results by Sample

REPORT

LAB # 85-02-093

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FRACTION 14A

TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 02/15/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-073

SAMPLE ID 3F-1

FRACTION 14A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/15/85 Category

DATA FILE _____ DATE INJECTED 02/05/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED C

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/g unless otherwise specified

ND = not detected at detection limit of 1 ug/g unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-02-093

SAMPLE ID 3F-2

FRACTION 15A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE	B	DATE INJECTED	02/21/85	ANALYST	CAC	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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LAB # 85-02-093

Results by Sample

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SAMPLE ID 3F-2

FRACTION 15A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/15/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-093

SAMPLE ID 3F-2

FRACTION 15A TEST CODE SW8020
Date & Time Collected 02/15/85

NAME GC-PID Arom. Vol. - SW846
Category

DATA FILE
CONC. FACTOR

DATE INJECTED 03/05/85

ANALYST
INSTRUMENT

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g/kg}$, unless otherwise specified.

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Results by Sample

LAB # 85-02-093

SAMPLE ID 3F-3

FRACTION 16A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE	B	DATE INJECTED	02/21/85	ANALYST	CAC	VERIFIED BY	JSJ
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

~~CORPORATION~~

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

Continued From Above

SAMPLE ID 3F-3

FRACTION 16A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 02/15/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-093

Results by Sample

SAMPLE ID 3F-3

FRACTION 16A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE _____

DATE INJECTED 03/05/85

VERIFIED BY JSG

CONC FACTOR _____

MCL

ANALYST _____

INSTRUMENT _____

COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g}/\text{Kg}$ unless otherwise specified.

ND = not detected at detection limit of $1 \mu\text{g}/\text{g}$ unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-093

SAMPLE ID 30-1

FRACTION 17A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE _____ B _____ DATE INJECTED 02/21/85 ANALYST _____ CAC _____ VERIFIED BY JSG
CONC FACTOR _____ INSTRUMENT _____ b _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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REPORT

LAB # 85-02-093

Results by Sample

Continued From Above

SAMPLE ID 3G-1

FRACTION 17A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/15/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 3G-1

FRACTION 1/A

TEST CODE SW8020

NAME GC-PID Atom

Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE
CONC. FACTOR

ID

DATE INJECTED 03/05/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN - scan number of retention time on chromatogram

All results reported to 0.001 mg/L unless otherwise specified

ND - not detected at detection limit of 1 ug/L, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-093

SAMPLE ID 36-2

FRACTION 18A

TEST CODE SWB010

NAME GC-HECD H₂log Vol. - SWB46

Date & Time Collected 02/15/85

Category

DATA FILE	B	DATE INJECTED	02/20/85	ANALYST	MOG	VERIFIED BY	SSG
CONC	FACTOR			INSTRUMENT	b	COMPOUNDS DETECTED	C
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2 Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,2 Dichloropropene	ND					

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-093

Continued From Above

SAMPLE ID 3G-2

FRACTION 18A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/15/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 36-2

FRACTION 18A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE _____ D _____ DATE INJECTED 03/05/85 ANALYST _____ MCL _____ VERIFIED BY JEG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND :	---	1,3-Dichlorobenzene	ND
---	Toluene	ND :	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND :	---	1,4-Dichlorobenzene	ND

NOTES: ADD DEL INSTRUCTIONS FOR THIS REPORT

SCAN is scan number of retention time for chromatogram.

All results reported to 1 mg/L unless otherwise specified.

ND = Not detected or detected at limit of 1 mg/L unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-093

SAMPLE ID 30-3

FRACTION 19A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE
CONC FACTOR

B

DATE INJECTED 02/20/85

ANALYST
INSTRUMENT

MSE

VERIFIED BY JSC
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethane	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropene	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

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RESULTS BY SAMPLE
LAB # 85-02-093
CONTINUED FROM ABOVE
SAMPLE ID 3G-3
FRACTION 19A
TEST CODE SW8010
NAME GC-HECD Hslog Vol. - SW846
Date & Time Collected 02/15/85
Category

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-093

SAMPLE ID 36-3

FRACTION 19A

TEST CODE SW8020

NAME GC-FID Atom Vol. - SW846

Date & Time Collected 02/15/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/05/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN - scan number of retention time on chromatogram

All results reported in this report are otherwise specified.

ND - not detected at detection limit of 1 ug/l, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-093

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01B	:	DUP_NS
02B	:	DUP_NS
03B	:	DUP_NS
04B	:	DUP_NS
05B	:	DUP_NS
06B	:	DUP_NS
07B	:	DUP_NS
08B	:	DUP_NS
09B	:	DUP_NS
10B	:	DUP_NS
12B	:	DUP_NS
13B	:	DUP_NS
14B	:	DUP_NS
15B	:	DUP_NS
16B	:	DUP_NS
17B	:	DUP_NS
18B	:	DUP_NS
19B	:	DUP_NS

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

03/07/86 17:27:05

REPORT Radian
TO BL 4
Austin

PREPARED Radian Analytical Services
BY 9501 MoPar Blvd
P.O. Box 9743
Austin, Texas 78765

ATTEN Toby Walters

CERTIFIED BY

CLIENT CANNON AFB
COMPANY Cannon AFB
FACILITY

ATTN PHONE (512) 454-4797

CONTACT CONDOVER

SAMPLES 22

WORK ID site 4 soil, 8010 & 8020

TAKEN DR

TRANS DR

TYPE

P.O. # 214-114-04-30

INV. # 5238

Note: Detection limits for SW8010 and SW8020 were 10 ug/Kg and 250 ug/Kg, respectively

Duplicate of report of 03/22/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	4A-1
02	4A-2
03	4A-3
04	4B-1
05	4B-2
06	4C-1
07	4C-2
08	4C-3
09	4D-1
10	4D-2
11	4D-3
12	4E-1
13	4E-2
14	4E-3
15	4F-1
16	4F-2

Analytical Serv TEST CODES and NAMES used on this report

SW8010 GC-HECD Halog Vol - SW845
SW8020 GC-PID Arom Vol - SW845

LABORATORY CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

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SAMPLE IDENTIFICATION

15 4E-2	_____
16 4E-3	_____
17 4F-1	_____
18 4F-2	_____
19 4F-3	_____
20 4G-1	_____
21 4G-2	_____
22 4G-3	_____

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4A-1

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/08/85

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 02/19/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

Continued From Above

SAMPLE ID 4A-1

FRACTION Q1A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/08/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-094

SAMPLE ID 4A-1

FRACTION Q1A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/08/85 Category

DATA FILE _____
CONC FACTOR _____

DATE INJECTED 02/26/85

ANALYST _____
INSTRUMENT _____
VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DETAIL INFORMATION: SEE THIS REPORT

SCAN = scan number of retention time in chromatogram.

All results reported in this report are otherwise specified.

ND = not detected or detection limit of 1 ppb, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4A-2

FRACTION 02A

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/08/85

Category

DATA FILE	A	DATE INJECTED	02/19/85	ANALYST	RAA	VERIFIED BY	JEG
CONC	FACTOR			INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoforn	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 4A-2

Analytical Serv

REPORT

Results by Sample

LAB # 85-02-094

Continued From Above

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/08/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-01-094

Results by Sample

SAMPLE ID 4A-2

FRACTION 02A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/08/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/26/85

ANALYST _____
INSTRUMENT _____

RAA _____
d _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time for chromatogram.

All results reported in this report are unless otherwise specified.

ND = Not detected at detection limit of 1 µg/g unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4A-3

FRACTION 03A
Date & Time Collected 02/08/85

TEST CODE SW2010 NAME GC-HECD H₂10q Vol. - SW846
Category

DATA FILE	A	DATE INJECTED	02/19/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

LABORATORY CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

Continued From Above

SAMPLE ID 4A-3

FRACTION 03A

TEST CODE SWB010

NAME GC-HECD H3loq Vol. - SW846

Date & Time Collected 02/08/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4A-3

FRACTION 03A TEST CODE SWB020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/08/85

Category

DATA FILE _____ D DATE INJECTED 02/26/85 ANALYST _____ RAA _____ VERIFIED BY _____
CONC. FACTOR _____ INSTRUMENT _____ d COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in _____ ug/Lg unless otherwise specified.

ND = not detected at detection limit of 1 ug/Lg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 48-1

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/08/85

Category

DATA FILE _____ A _____ DATE INJECTED 02/17/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethane	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethane	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethane	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	trans-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

LABORATORY CORPORATION

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REPORT

Results by Sample

LAB # 85-02-094

Continued From Above

SAMPLE ID 4B-1

FRACTION Q4A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/08/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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LAB # 85-02-094

Results by Sample

SAMPLE ID 48-1

FRACTION 04A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/08/85 Category

DATA FILE _____ D DATE INJECTED 02/27/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in _____ unless otherwise specified.

ND = not detected at detection limit of 1 µg/g unless otherwise specified.

LABORATORY

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 48-2

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected not specified

Category

DATA FILE _____ A _____ DATE INJECTED 02/19/85 ANALYST _____ RAA _____ VERIFIED BY JSG
 CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

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LAB # 85-02-094

Results by Sample

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SAMPLE ID 4B-2

FRACTION 05A

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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REPORT

Results by Sample

LAB # 85-02-094

SAMPLE ID 4B-2

FRACTION 05A

TEST CODE SW8020

NAME GC-PID Arom

Vol. - SW846

Date & Time Collected not specified

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/27/85

ANALYST
INSTRUMENT

MCL

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g/L}$, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4C-1

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE	A	DATE INJECTED	ANALYST	RAA	VERIFIED BY
CONC. FACTOR		02/17/85	INSTRUMENT	a	JSB
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethane	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropene	ND			
	trans-1,3-Dichloropropene	ND			

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REPORT

Results by Sample

LAB # 85-02-094

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SAMPLE ID 4C-1

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/09/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4C-1

FRACTION 06A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE _____ D _____ DATE INJECTED 02/27/85 ANALYST _____ MCL _____ VERIFIED BY JSC
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in unlabeled unless otherwise specified.

ND = Not detected or detection limit of 1 ug/g unless otherwise specified.

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REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4C-2

FRACTION 07A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE	DATE INJECTED	ANALYST	RAA	VERIFIED BY	
CONC. FACTOR	02/20/85	INSTRUMENT	3	JSG	
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,3-Dichloropropene	ND			

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SAMPLE ID 4C-2

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Results by Sample

LAB # 85-02-094

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FRACTION 07A

TEST CODE SUB010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/07/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample
LAB # 85-03-094
SAMPLE ID 4C-2
FRACTION 07A TEST CODE SW8020 NAME GC-PID Atom Vol. - SWB46
Date & Time Collected 02/09/85 Category

DATA FILE _____ D DATE INJECTED 02/27/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT:
SCAN = scan number of retention time on chromatogram.
All results reported in mg/kg unless otherwise specified.
ND = not detected at detection limit of 1 mg/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4C-3

FRACTION 08A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE	A	DATE INJECTED	02/20/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Results by Sample

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FRACTION 08A

TEST CODE SW2010

NAME GC-HECD Halog Vol. - SWB46

Date & Time Collected 02/09/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

WATKINS CORPORATION

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Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4C-3

FRACTION Q8A

TEST CODE SW2020

NAME GC-PID Atom Vol. - SW246

Date & Time Collected 02/09/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/27/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number of retention time on chromatogram.

All results reported in this report unless otherwise specified.

ND = Not detected at detection limit of 1 ng/l unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4D-1

FRACTION 09A
Date & Time Collected 02/11/85

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE
CONC. FACTOR

A DATE INJECTED 02/20/85

ANALYST
INSTRUMENT

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

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LAB # 85-02-094

Results by Sample

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SAMPLE ID 4D-1

FRACTION 09A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-02-094

SAMPLE ID 40-1

FRACTION 09A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE _____ D _____ DATE INJECTED 02/27/85 ANALYST _____ MCL _____ VERIFIED BY JSC
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND	—	1,3-Dichlorobenzene	ND
—	Toluene	ND	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/g unless otherwise specified

ND = not detected at detection limit of 1 ug/g, unless otherwise specified.

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Results by Sample

LAB # 85-02-094

SAMPLE ID 4D-2

FRACTION 10A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE _____ G _____ DATE INJECTED 02/17/85 ANALYST _____ RAA _____ VERIFIED BY JSC
CONC. FACTOR _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,3-Dichloropropene	ND			

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LAB # 85-02-094

Results by Sample

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SAMPLE ID 4D-2

FRACTION 10A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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LAB # 85-02-094

SAMPLE ID 4D-2 FRACTION 10A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/11/85 Category

DATA FILE D DATE INJECTED 02/27/85 ANALYST MCL VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND ;		1,3-Dichlorobenzene	ND
	Toluene	ND ;		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND ;		1,4-Dichlorobenzene	ND
		;			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified.
ND = not detected at detection limit of 1 $\mu\text{g}/\text{L}$ unless otherwise specified.

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Results by Sample

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LAB # 85-02-094

SAMPLE ID 4D-3

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Hslog Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE _____ B _____ DATE INJECTED 02/17/85
CONC. FACTOR _____ ANALYST _____ RAA _____ VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,3-Dichloropropene	ND			

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Results by Sample

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FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 02/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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 SAMPLE ID 4D-3
 Analytical Serv
 Results by Sample
 REPORT
 LAB # 85-02-094
 FRACTION 11A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
 Date & Time Collected 02/11/85 Category

DATA FILE _____
 CONC. FACTOR _____
 DATE INJECTED 02/27/85
 ANALYST _____
 INSTRUMENT _____
 RAA _____
 VERIFIED BY JSG
 COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT
 SCAN = scan number or retention time on chromatogram.
 All results reported in ug/kg unless otherwise specified.
 ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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LAB # 85-02-094

Results by Sample

SAMPLE ID 4D-4

FRACTION 12A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE _____ G _____ DATE INJECTED 02/19/85 ANALYST _____ RAA _____ VERIFIED BY JSG
 CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethane	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,3-Dichloropropene	ND			

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REPORT

LAB # 85-02-094

Results by Sample

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FRACTION 12A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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LAB # 85-02-094

Results by Sample

SAMPLE ID 4D-4

FRACTION 12A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/27/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/l unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4E-1

FRACTION 13A

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE	B	DATE INJECTED	02/19/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 4E-1

Analytical Serv

REPORT

Results by Sample

LAB # 85-02-094

Continued From Above

FRACTION 13A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 02/11/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

Results by Sample

LAB # 85-02-094

SAMPLE ID 4E-1

FRACTION 13A TEST CODE SW8020 NAME GC-PID Arom Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 02/27/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-094

SAMPLE ID 4E-1a

FRACTION 14A

TEST CODE SW2010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 02/19/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,2-Dichloropropene	ND			

LABORATORY CORPORATION

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REPORT

LAB # 85-02-094

Results by Sample

Continued From Above

SAMPLE ID 4E-1a

FRACTION 14A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-02-094

SAMPLE ID 4E-1a

FRACTION 14A TEST CODE SWB020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/11/85 Category

DATA FILE _____ D _____
CONC. FACTOR _____

DATE INJECTED 02/27/85

ANALYST _____ RAA _____
INSTRUMENT _____ d _____
VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND ;	—	1,3-Dichlorobenzene	ND
—	Toluene	ND ;	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND ;	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/l unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4E-2

FRACTION 15A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE _____ B _____ DATE INJECTED 02/19/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethane	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

Continued From Above

SAMPLE ID 4E-2

FRACTION 15A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

PAGE
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SAMPLE
CORPORATION

NO

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4E-2

FRACTION 15A

TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE _____ D _____ DATE INJECTED 02/27/85 ANALYST _____ RAA _____ VERIFIED BY JEG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4E-3

FRACTION 16A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE	G	DATE INJECTED	02/19/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	g	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
---	Chloromethane	ND	---	Trichloroethane	ND		
---	Bromomethane	ND	---	Dibromochloromethane	ND		
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND		
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND		
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND		
---	Trichlorofluoromethane	ND	---	Bromoform	ND		
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND		
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND		
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND		
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND		
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND		
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND		
---	Carbon Tetrachloride	ND					
---	Bromodichloromethane	ND					
---	1,2-Dichloropropane	ND					
---	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-02-094

Results by Sample

Continued From Above

SAMPLE ID 4E-3

FRACTION 16A

TEST CODE SW8010

NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected 02/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4E-3

FRACTION 16A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/11/85

Category

DATA FILE _____ D _____ DATE INJECTED 02/27/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED _____ Q _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-094

SAMPLE ID 4F-1

FRACTION 17A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 02/09/85 Category

DATA FILE	B	DATE INJECTED	02/19/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-02-094

Results by Sample
Continued From Above

SAMPLE ID 4F-1

FRACTION 17A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & time Collected 02/09/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4F-1

FRACTION 17A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE _____ D _____ DATE INJECTED 03/03/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND :	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND :	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND :	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/Kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/Kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4F-2

FRACTION 18A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE _____ G DATE INJECTED 02/19/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,3-Dichloropropene	ND			

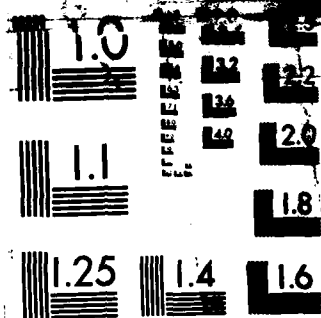
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INSTALLATION RESTORATION PROGRAM PHASE II
CONFIRMATION/QUANTIFICATION STA. (U) RADIAN CORP AUSTIN
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REPORT

LAB # 85-02-094

Results by Sample

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SAMPLE ID 4F-2

FRACTION 18A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/09/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 4F-2

FRACTION 18A TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE _____ D _____ DATE INJECTED 03/03/85 ANALYST _____ RAA _____ VERIFIED BY JSJ
CONC. FACTOR _____ INSTRUMENT _____d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number of retention time on chromatogram.

All results reported in _____ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/l unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4F-3

FRACTION 19A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE	B	DATE INJECTED	02/19/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropane	ND					

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

Continued From Above

SAMPLE ID 4F-3

FRACTION 19A

TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 02/09/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4F-3

FRACTION 19A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/09/85

Category

DATA FILE

D

DATE INJECTED 03/03/85

ANALYST

RAA

VERIFIED BY JSG

CONC. FACTOR

INSTRUMENT

COMPOUNDS DETECTED

Q

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/Kg}$ unless otherwise specified.

ND = not detected at detection limit of $1 \mu\text{g/Kg}$, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

RECEIVED: 02/18/85

Results by Sample

SAMPLE ID 4G-1

FRACTION 20A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/10/85

Category

DATA FILE	Q	DATE INJECTED	ANALYST	RAA	VERIFIED BY
CONC. FACTOR		02/19/85	INSTRUMENT	g	JSG
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropene	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

Continued From Above

SAMPLE ID 40-1

FRACTION 20A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/10/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CONFIRMATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-094

SAMPLE ID 46-1

FRACTION 20A TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/10/85

Category

DATA FILE
CUNC. FACTOR

D

DATE INJECTED 03/03/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/l unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-02-094

SAMPLE ID 4G-2

FRACTION 21A

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/10/85

Category

DATA FILE	B	DATE INJECTED	02/19/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 40-2

Analytical Serv

REPORT

Results by Sample

LAB # 85-02-094

Continued From Above

FRACTION 21A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/10/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

SAMPLE ID 40-2

FRACTION 21A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/10/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 03/03/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/Kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/Kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-094

SAMPLE ID 4G-3

FRACTION 22A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/10/85

Category

DATA FILE	G	DATE INJECTED	02/19/85	ANALYST	MSF	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	g	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-094

Results by Sample

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SAMPLE ID 40-3

FRACTION 22A TEST CODE SW8010

NAME GC-HECD H310q Vol. - SW846

Date & Time Collected 02/10/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/K unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

LAB # 85-02-094

REPORT

Results by Sample

SAMPLE ID 4G-3

FRACTION 22A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/10/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/03/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED Q

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND
---		;	---		

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg unless otherwise specified.

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Analytical Serv

REPORT

NonReported Work

LAB # 85-02-094

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01B	:	DUP_NS
02B	:	DUP_NS
03B	:	DUP_NS
04B	:	DUP_NS
05B	:	DUP_NS
06B	:	DUP_NS
07B	:	DUP_NS
08B	:	DUP_NS
09B	:	DUP_NS
10B	:	DUP_NS
11B	:	DUP_NS
13B	:	DUP_NS
15B	:	DUP_NS
16B	:	DUP_NS
17B	:	DUP_NS
18B	:	DUP_NS
19B	:	DUP_NS
20B	:	DUP_NS
21B	:	DUP_NS
22B	:	DUP_NS

CORPORATION

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Analytical Serv

REPORT

03/07/86 17:34:58

LAB # 85-02-099

REPORT Radian
TO BL 4

Austin

ATTEN Toby Walters

CLIENT CANNON AFB
COMPANY Cannon AFB
FACILITY

SAMPLES 8

WORK ID soil sites 6,7,8-8010,8020

TAKEN IW

TRANS IW

TYPE

P.O. # 214-114-04-30

INV. # 5239

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P.O. Box 9748

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Note: Detection limits for SW8010 and SW8020 were 10 ug/Kg and 150 ug/Kg, respectively.

Duplicate of report of 03/25/85.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	6A-1
02	6A-2
03	6A-3
04	7-1
05	7-2
06	8-1
07	8/2
08	8-3

Analytical Serv TEST CODES and NAMES used on this report

SW8010 GC-HECD Halog. Vol. - SW846
SW8020 GC-PID Arom. Vol. - SW846

INCORPORATION

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

SAMPLE ID 6A-1

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/19/84

Category

DATA FILE

B

DATE INJECTED 02/22/85

ANALYST

CAC

VERIFIED BY JSQ

CONC. FACTOR

b

INSTRUMENT

COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

Continued From Above

SAMPLE ID 6A-1

FRACTION Q1A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 11/19/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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 Results by Sample
 REPORT
 LAB # 85-02-099
 FRACTION 01A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846
 Date & Time Collected 11/19/84 Category

DATA FILE _____ D _____ DATE INJECTED 03/05/85 ANALYST _____ RAA _____ VERIFIED BY JSG
 CONC. FACTOR _____ INSTRUMENT _____d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/kg unless otherwise specified.
 ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-099

SAMPLE ID 6A-2

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/19/84

Category

DATA FILE	B	DATE INJECTED	02/22/85	ANALYST	CAC	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-099

Continued From Above

SAMPLE ID 6A-2

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/19/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CONFIRMATION

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Analytical Serv
Results by Sample

LAB # 85-02-099

SAMPLE ID 6A-2

FRACTION 02A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 11/19/84 Category

DATA FILE _____ D DATE INJECTED 03/05/85 ANALYST _____ RAA VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g/kg}$ unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

SAMPLE ID 6A-3

FRACTION 03A

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/19/84

Category

DATA FILE
CUNC FACTOR

B

DATE INJECTED 02/22/85

ANALYST
INSTRUMENTCAC
bVERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethene	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,3-Dichloropropane	ND			

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

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SAMPLE ID 6A-3

FRACTION 03A

TEST CODE SW8010

NAME GC-HECD Hslog Vol. - SW846

Date & Time Collected 11/19/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-099

SAMPLE ID 6A-3

FRACTION 03A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 11/19/84

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 03/05/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSQ
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in µg/kg unless otherwise specified.
ND = not detected at detection limit of 1 µg/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-02-099

SAMPLE ID 7-1

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/18/84

Category

DATA FILE	B	DATE INJECTED	02/22/85	ANALYST	CAC	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	G
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,2-Dichloropropene	ND					

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REPORT

LAB # 85-02-099

Results by Sample

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SAMPLE ID 7-1

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/18/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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 LAB # 85-02-099
 FRACTION 04A
 TEST CODE SW8020
 NAME GC-PID Atom. Vol. - SW846
 Date & Time Collected 11/18/84
 Category

DATA FILE _____ D _____ DATE INJECTED 03/05/85
 ANALYST _____ RAA _____ VERIFIED BY JSG
 CONC. FACTOR _____ INSTRUMENT _____d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND :	---	1,3-Dichlorobenzene	ND
---	Toluene	ND :	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND :	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT
 SCAN = scan number or retention time on chromatogram.
 All results reported in _____ unless otherwise specified
 ND = not detected at detection limit of 1 ug/g unless otherwise specified.

LABORATORY

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-099

SAMPLE ID 7-2

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/18/84

Category

DATA FILE _____ B _____ DATE INJECTED 02/22/85 ANALYST _____ CAC _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ b _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethane	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

LABORATORY CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

Continued From Above

SAMPLE ID 7-2

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected 11/18/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-099

SAMPLE ID 7-2

FRACTION 05A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 11/18/84

Category

DATA FILE _____ D _____ DATE INJECTED 03/05/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND ;		1,3-Dichlorobenzene	ND
	Toluene	ND ;		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND ;		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-099

SAMPLE ID 8-1

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/17/84

Category

DATA FILE: A

DATE INJECTED 02/25/85

ANALYST

RAA

VERIFIED BY JSG

CONC. FACTOR

a

INSTRUMENT

COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropene	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 85-02-099

Continued From Above

SAMPLE ID 8-1

FRACTION 06A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/17/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

COMPARISON

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

SAMPLE ID 8-1

FRACTION 06A TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 11/17/84

Category

DATA FILE
CONC FACTOR

DATE INJECTED 03/05/85

D

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

ALL results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified

ND = not detected at detection limit of 1 $\mu\text{g}/\text{l}$ unless otherwise specified

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RECEIVED: 02/18/85

Analytical Serv
Results by Sample

LAB # 85-02-099

SAMPLE ID 8/2

FRACTION 07A
Date & Time Collected not specified

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE _____ A _____ DATE INJECTED 02/25/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____a _____ COMPOUNDS DETECTED _____ 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethene	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

CORPORATION

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SAMPLE ID 8/2

Analytical Serv

REPORT

Results by Sample

LAB # 85-02-099

Continued From Above

FRACTION 07A TEST CODE SW8010 NAME GC-HECD H3loq. Vol. - SW846
Date & Time Collected not specified Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

SAMPLE ID 8/2

FRACTION 07A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected not specified

Category

DATA FILE _____ ID _____ DATE INJECTED 03/05/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in analyzed units unless otherwise specified

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-02-099

SAMPLE ID 8-3

FRACTION QBA

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/17/84

Category

DATA FILE	B	DATE INJECTED	02/25/85	ANALYST	RA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

Continued From Above

SAMPLE ID 8-3

FRACTION 08A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/17/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-099

Results by Sample

SAMPLE ID 8-3

FRACTION 08A

TEST CODE SW8020

NAME GC-PID Atom.

Vol. - SW846

Date & Time Collected 11/17/84

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/05/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/Kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g/g}$ unless otherwise specified.

COMPORATION

PAGE 1
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Analytical Serv
03/07/86 17:38:19

LAB # 85-02-176

REPORT Radian
TO BL 4
Austin

PREPARED Radian Analytical Services
BY B501 MoPac Blvd
P O Box 9948
Austin, Texas 78766

ATTEN Toby Walters

CERTIFIED BY

CLIENT CANNON AFB
COMPANY Cannon AFB
FACILITY
SAMPLES 12

PHONE (512) 454-4797

CONTACT CONOVER

WORK ID site 3 soils (A-G)

TAKEN DLR
TRANS Fed Ex

Footnotes and Comments

P. O. # 214-114-04-30

* Indicates a value less than 5 times the detection limit
Potential error for such low values ranges between
50 and 100%.

INVOICE under separate cover

Duplicate of report of 03/27/85

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01	3A-1	
02	3A-2	
03	3A-3	
04	3B-1	
05	3B-2	
06	3B-3	
07	3C-1	
08	3C-2	
09	3C-3	
10	3D-1	
11	3D-1a	
12	3D-2	
13	3D-3	
14	3F-1	
15	3F-2	
16	3F-3	
17	3G-1	

Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPEs
AS GA	Arsenic, low level
BA E	Barium, ICPEs
CD E	Cadmium, ICPEs
CR E	Chromium, ICPEs
CU E	Copper, ICPEs
FE E	Iron, ICPEs
HG CA	Mercury, Cold Vapor
NI E	Nickel, ICPEs
OR JR	Oil and Grease, Infrared
PB GA	Lead, low level
RE W	Residual Digestion Method
RE W	Residual Digestion Method
SI GA	Selenium, low level
TH GH	Thiophene in Solids
ZN E	Zinc, ICPEs

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-176

03/07/86 17:38:19

SAMPLE IDENTIFICATION

17 3G-1

18 3G-2

19 3G-3

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	0.50 ug/g	1.1 ug/g	<.19 ug/g	0.23 ug/g	0.44 ug/g
AS GA	0.89 ug/g	0.92 ug/g	0.81 ug/g	1.2 ug/g	0.93 ug/g
BA E	48 ug/g	310 ug/g	36 ug/g	40 ug/g	140 ug/g
CD E	0.37 ug/g	<.20 ug/g	<.19 ug/g	<.20 ug/g	<.20 ug/g
CR E	5.6 ug/g	2.4 ug/g	3.4 ug/g	3.4 ug/g	2.6 ug/g
CU E	1.8 ug/g	<.49 ug/g	<.47 ug/g	0.55 ug/g	<.50 ug/g
FE E	5200 ug/g	1500 ug/g	1900 ug/g	4200 ug/g	1700 ug/g
HG CA	<.05 ug/g	<.05 ug/g	<.05 ug/g	<.05 ug/g	0.07 ug/g
NI E	3.9 ug/g	1.6 ug/g	0.92 ug/g	4.0 ug/g	1.1 ug/g
ONG IR	<10 ug/g	<10 ug/g	<10 ug/g	<10 ug/g	<10 ug/g
PB GA	4.5 ug/g	1.7 ug/g	1.7 ug/g	4.2 ug/g	6.0 ug/g
PREP W	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
date complete					
PREP X	03/11/85	03/11/85	03/11/85	03/11/85	03/11/85
date complete					
SE GA	<.18 ug/g	<.18 ug/g	<.18 ug/g	<.18 ug/g	<.18 ug/g
ug/ml					

CORPORATION

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Analytical Serv REPORT
RESULTS BY TEST

LAB # 85-02-176
CONTINUED FROM ABOVE

TOCSOL	0.18	1.35	0.12	0.15	0.03
%					
ZN_E	19	11	11	67	14
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 06	Sample 07	Sample 08	Sample 09	Sample 10
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG_E	0.39	0.37	0.41	0.26	0.65
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS_GA	0.62	0.87	1.8	<.2	0.80
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA_E	140	39	150	180	33
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD_E	<.20	<.20	<.20	<.20	0.33
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR_E	1.7	5.8	3.5	15	4.2
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CU_E	<.49	<.49	<.49	<.49	1.3
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
FE_E	1400	3400	2000	2700	4000
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
HG_GA	<.05	0.07	<.05	<.05	<.05
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
NI_E	0.50	3.3	0.98	<.30	4.0
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
ONG_IR	<10	<10	<10	24	<10
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB_GA	1.2	3.6	2.4	14	4.4
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

INCORPORATION

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-02-176

CONTINUED FROM ABOVE

PREP_W	03/01/85	03/01/85	03/01/85
date complete			
PREP_X	03/11/85	03/11/85	03/11/85
date complete			
SE GA	<.18	<.18	<.18
ug/ml	ug/g	ug/g	ug/g
TOCSOL	0.02	0.09	0.01
%			
ZN E	4.4	17	2.6
ug/ml	ug/g	ug/g	ug/g

TEST CODE	Sample 11	Sample 12	Sample 13	Sample 14	Sample 15
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	0.63	<.20	<.20	0.80	0.45
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS GA	0.80	0.88	<.2	0.58	0.94
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA E	70	260	180	49	190
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD E	0.35	<.20	<.20	0.27	<.20
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR E	4.6	2.4	0.86	3.7	2.2
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CJ E	1.9	<.49	14	1.3	<.49
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
FE E	4400	2500	1200	3300	2100
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
HG CA	0.05	<.05	<.05	<.05	<.05
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

CORPORATION

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Analytical Serv
RESULTS BY TEST

LAB # 85-02-176
CONTINUED FROM ABOVE

NI E	4.5	1.6	<.29	4.0	1.5
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
ONG IR	37	<10	43	16	<10
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB GA	4.6	2.8	14	4.1	3.1
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
PREP W	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
date complete					
PREP X	03/11/85	03/11/85	03/11/85	03/11/85	03/11/85
date complete					
SE GA	<.18	<.18	<.18	<.18	<.18
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
TOCSOL	0.21	0.02	<.01	0.15	0.02
%					
ZN E	14	11	500	51	60
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 16	Sample 17	Sample 18	Sample 19
default units	(entered units)	(entered units)	(entered units)	(entered units)
AG E	<.20	<.20	0.86	0.77
ug/ml	ug/g	ug/g	ug/g	ug/g
AS GA	<.2	0.51	0.74	<.2
ug/ml	ug/g	ug/g	ug/g	ug/g
BA E	60	69	130	10
ug/ml	ug/g	ug/g	ug/g	ug/g
CD E	<.20	<.20	<.20	<.20
ug/ml	ug/g	ug/g	ug/g	ug/g
CR E	<.50	3.9	3.5	1.1
ug/ml	ug/g	ug/g	ug/g	ug/g

LABORATORY

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-02-176
CONTINUED FROM ABOVE

CU E	<.50	1.3	<.50	<.47
ug/ml	ug/g	ug/g	ug/g	ug/g
FE E	1100	4700	2100	930
ug/ml	ug/g	ug/g	ug/g	ug/g
HG CA	<.05	<.05	<.05	0.08
ug/ml	ug/g	ug/g	ug/g	ug/g
NI E	<.30	3.8	2.2	0.29
ug/ml	ug/g	ug/g	ug/g	ug/g
ONG IR	<10	42	26	25
mg/L	ug/g	ug/g	ug/g	ug/g
PB GA	1.1	5.3	3.1	0.94
ug/ml	ug/g	ug/g	ug/g	ug/g
PREP W	03/01/85	03/01/85	03/01/85	03/01/85
date complete				
PREP X	03/11/85	03/11/85	03/11/85	03/11/85
date complete				
SE GA	<.18	<.18	<.18	<.18
ug/ml	ug/g	ug/g	ug/g	ug/g
TOCSUL	<.01	0.11	0.01	<.01
%				
ZN E	<.30	110	43	1.1
ug/ml	ug/g	ug/g	ug/g	ug/g

CORPORATION

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REPORT

LAB # 85-02-177

03/07/85 17:40:56

REPORT Radian
10 Bl 4
Austin

PREPARED Radian Analytical Services
BY 8501 MoPac Blvd
P.O. Box 9748
Austin, Texas 78766

ATTEN Toby Walters

CERTIFIED BY

CLIENT CANNON AFB
COMPANY Cannon AFB
FACILITY

SAMPLES 5

ATTEN

PHONE (512) 454-4777

CONTACT CONOVER

WORK ID site 3 soils (H.I.)

TAKEN TKW

TRANS Fed Ex

TYPE

P.O. # 214-114-04-30

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Duplicate of report of 03/28/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between
50 and 100%.

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 3H-1
02 3H-2
03 3H-3
04 3I-1
05 3I-2
06 2I-3

Analytical Serv TEST CODES and NAMES used on this report

AG F Silver, ICPEs
AS GA Arsenic, low level
BA F Barium, ICPEs
CD F Cadmium, ICPEs
CR C Chromium, ICPEs
CU F Copper, ICPEs
FE F Iron, ICPEs
HG CA Mercury, Cold Vapor
NI F Nickel, ICPEs
Pb CA Lead, low level
Pb CA Lead and Grease, Infrared
Pb CA Lead, low level
PROP H Special Digestion Method
PROP X Special Digestion Method
SI CA Selenium, low level
TMOBHI Hg in solids
Zn F Zinc, ICPEs

CORPORATION

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Analytical Serv
RESULTS BY TEST

LAB # 85-02-177

REPORT

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	0.76 ug/g	0.23 ug/g	0.40 ug/g	0.87 ug/g	0.25 ug/g
AS GA	1.3 ug/g	0.66 ug/g	<.2 ug/g	<.2 ug/g	0.85 ug/g
BA E	110 ug/g	540 ug/g	51 ug/g	47 ug/g	54 ug/g
CD E	0.23 ug/g	<.19 ug/g	<.19 ug/g	0.35 ug/g	<.20 ug/g
CR E	4.5 ug/g	4.6 ug/g	<.49 ug/g	4.9 ug/g	2.2 ug/g
CU E	0.57 ug/g	<.48 ug/g	<.49 ug/g	1.0 ug/g	<.48 ug/g
FE E	3700 ug/g	4600 ug/g	600 ug/g	4500 ug/g	2400 ug/g
HG CA	<.05 ug/g	<.05 ug/g	<.05 ug/g	<.05 ug/g	<.05 ug/g
NI E	2.6 ug/g	7.0 ug/g	<.29 ug/g	3.8 ug/g	1.6 ug/g
UNG IR	10 ug/g	20 ug/g	25 ug/g	45 ug/g	35 ug/g
PB GA	5.0 ug/g	6.1 ug/g	0.78 ug/g	4.2 ug/g	2.9 ug/g
PREP W	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
date complete					
PREP X	03/11/85	03/11/85	03/11/85	03/11/85	03/11/85
date complete					
SE GA	<.18 ug/g	<.18 ug/g	<.18 ug/g	<.18 ug/g	<.18 ug/g

CORPORATION

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Analytical Serv

LAB # 85-02-177

REPORT
RESULTS BY TEST

CONTINUED FROM ABOVE

TOCSUL	0.93	0.03	0.02	0.23	0.02
%					
ZN_E	6.5	8.6	0.31	6.1	3.7
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 06				
default units	(entered units)				
AG_E	<.19				
ug/ml	ug/g				
AS_GA	<.2				
ug/ml	ug/g				
BA_E	18				
ug/ml	ug/g				
CD_E	<.19				
ug/ml	ug/g				
CR_E	<.47				
ug/ml	ug/g				
CU_E	<.47				
ug/ml	ug/g				
FE_E	1100				
ug/ml	ug/g				
HG_GA	<.05				
ug/ml	ug/g				
NI_E	<.28				
ug/ml	ug/g				
ONG_LR	<10				
mg/L	ug/g				
PB_GA	0.81				
ug/ml	ug/g				

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Analytical Serv

REPORT

LAB # 85-02-177

RESULTS BY TEST

CONTINUED FROM ABOVE

PREP W	03/01/85
date complete	
PREP X	03/11/85
date complete	
SE GA	< 18
ug/ml	ug/g
TOCSOL	0.02
%	
ZN E	< 28
ug/ml	ug/g

PAGE 1
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Analytical Serv

REPORT

LAB # 85-02-185

03/07/86 17:42:18

REPORT Radian
TO Bl 4
Austin

PREPARED Radian Analytical Services

BY 3501 MoPac Blvd

P.O. Box 9940

Austin, Texas 78765

ATTEN Tobu Walters

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 17

WORK ID soil site 4

TAKEN DLR

TRANS Fed Ex

TYPE

P.O. # 214-114-04-30

INVOICE under separate cover

Duplicate of report of 03/28/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between
50 and 100%.

@ Indicates that spike recovery for this analysis on the
specimen matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01	4A-1
02	4A-2
03	4A-3
04	4B-1
05	4B-2
06	4C-1
07	4C-2
08	4C-3
09	4D-1
10	4D-2
11	4D-3
12	4D-4
13	4E-1
14	4E-2
15	4E-3
16	4E-4
17	4E-5

Analytical Serv TEST CODES and NAMES used on this report

AG E	Aspirator, ICPE
AS GA	Arsenic, low level
BA E	Barium, ICPE
CD E	Cadmium, ICPE
CE E	Chromium, ICPE
CU E	Copper, ICPE
FE E	Iron, ICPE
HC GA	Hydrogen, Cold Vapor
HI E	Hydrogen, ICPE
IN E	Isotopes and Gases, Infrared
LE GA	Lead, low level
PH E	Phosphorus, Gravimetric Method
PT E	Potassium, Gravimetric Method
SE GA	Selenium, low level
SO GA	Sulfur, low level
TH E	Thallium, ICPE

PAGE 2

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Analytical Serv

REPORT

03/07/86 17:42:18

LAB # 85-05-185

SAMPLE IDENTIFICATION

17 4F-1	_____
18 4F-2	_____
19 4F-3	_____

CORPORATION

PAGE 3

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Analytical Serv

REPORT

LAB # 85-02-185

RESULTS BY TEST

TEST CODE	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
AG E	<19 ug/ml	0.56 ug/g	1.1 ug/g	0.43 ug/g	1.4 ug/g
AS GA	0.96 ug/g	0.87 ug/g	<2 ug/g	1.1 ug/g	2.3 ug/g
BA E	75 ug/ml	130 ug/g	15 ug/g	57 ug/g	150 ug/g
CD E	<20 ug/ml	<20 ug/g	0.25 ug/g	<20 ug/g	<20 ug/g
CR E	1.7 ug/ml	4.8 ug/g	0.64 ug/g	3.3 ug/g	4.6 ug/g
CU E	1.7 ug/ml	<49 ug/g	<50 ug/g	<49 ug/g	<50 ug/g
FE E	4900 ug/ml	5200 ug/g	200 ug/g	2600 ug/g	3400 ug/g
HG CA	<05 ug/ml	<05 ug/g	<05 ug/g	<05 ug/g	<05 ug/g
NI E	3.2 ug/ml	5.1 ug/g	<30 ug/g	5.3 ug/g	5.3 ug/g
ONG IR	18 ug/ml	<10 ug/g	34 ug/g	<10 ug/g	<10 ug/g
PB GA	5.5 ug/ml	4.5 ug/g	0.54 ug/g	4.1 ug/g	5.1 ug/g
PREP W	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
data complete					
PREP X	03/12/85	03/12/85	03/12/85	03/12/85	03/12/85
data complete					
SL GA	<18 ug/ml	00 ug/g	1.1 ug/g	<18 ug/g	<18 ug/g

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Analytical Lab

REPORT

RESULTS BY TEST

LAB # 85-02-185

CONTINUED FROM ABOVE

TOCSOL	0.22	0.04	0.01	0.23	0.10
%					
ZN E	94	45	54	29	10
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 06	Sample 07	Sample 08	Sample 09	Sample 10
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	1.1	0.92	<.20	0.72	<.20
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS GA	0.82	<.2	0.81	1.2	1.2
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA E	54	150	23	210	38
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD E	0.52	<.20	<.20	0.30	<.20
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR E	4.9	3.7	0.91	5.0	3.9
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CU E	1.7	<.47	<.50	1.6	0.72
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
FE E	880	3100	1500	4400	4600
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
HG GA	<.05	0.11	<.05	<.05	<.05
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
NI E	6.7	4.5	<.30	3.4	3.7
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
ONG IR	<10	<10	<10	<10	<10
mg/l	ug/g	ug/g	ug/g	ug/g	ug/g
PB GA	4.2	3.3	0.74	5.3	5.0
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

CORPORATION

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Analytical Serv

REPORT

LAB # 85-02-185

RECEIVED: 02/27/85

RESULTS BY TEST

CONTINUED FROM ABOVE

PREP W	03/01/85	03/01/85	03/01/85
date complete			
PREP X	03/12/85	03/12/85	03/12/85
date complete			
SE GA	< 18	< 18	< 18
ug/ml	ug/g	ug/g	ug/g
TOCSOL	0.09	0.07	0.22
%			0.04
ZN E	70	26	14
ug/ml	ug/g	ug/g	ug/g
			260

TEST CODE	Sample 11	Sample 12	Sample 13	Sample 14	Sample 15
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	0.57	< 19	< 20	0.61	0.40
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS GA	1.1	0.81	1.0	1.1	< 2
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA E	240	320	52	64	160
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD E	< 19	< 20	< 20	0.44	< 20
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR E	4.4	1.1	5.4	6.4	1.3
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CU E	< 49	< 50	2.5	2.5	< 50
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
FE E	3000	2100	6900	5400	25
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
HG CA	< 05	< 05	< 05	0.07	< 05
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

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Analytical Serv
RESULTS BY TEST

LAB # 85-02-185
CONTINUED FROM ABOVE

NI E	1.6	<.30	5.4	6.0	2.3
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
ONG IR	<10	<10	<10	<10	<10
ug/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB GA	1.9	1.0	6.5	5.7	3.1
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
PREP W	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
date complete					
PREP X	03/12/85	03/12/85	03/12/85	03/12/85	03/12/85
date complete					
SE GA	<.18	<.18	<.18	<.18	<.18
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
TOCSOL	0.04	0.02	0.23	0.12	0.02
%					
ZN E	7.5	4.5	85	120	8.8
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 16	Sample 17	Sample 18	Sample 19
default units	(entered units)	(entered units)	(entered units)	(entered units)
AG E	0.46	<.20	1.0	<.20
ug/ml	ug/g	ug/g	ug/g	ug/g
AS GA	<.2	1.3	0.71	0.65
ug/ml	ug/g	ug/g	ug/g	ug/g
BA E	5.9	78	270	9.2
ug/ml	ug/g	ug/g	ug/g	ug/g
CD E	<.20	<.20	0.23	<.20
ug/ml	ug/g	ug/g	ug/g	ug/g
CR E	<.47	2.5	4.1	2.5
ug/ml	ug/g	ug/g	ug/g	ug/g

CORPORATION

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-02-185

CONTINUED FROM ABOVE

CU E	<.49	0.92	0.58	<.50
ug/ml	ug/g	ug/g	ug/g	ug/g
FE E	14	3100	3400	1700
ug/ml	ug/g	ug/g	ug/g	ug/g
HG CA	<.05	<.05	<.05	<.05
ug/ml	ug/g	ug/g	ug/g	ug/g
NI E	<.29	1.9	3.7	<.30
ug/ml	ug/g	ug/g	ug/g	ug/g
ONG IR	<10	<10	<10	45
ug/L	ug/g	ug/g	ug/g	ug/g
PB GA	0.24	3.9	4.1	2.2
ug/ml	ug/g	ug/g	ug/g	ug/g
PREP W	03/01/85	03/01/85	03/01/85	03/01/85
date complete				
PREP X	03/12/85	03/12/85	03/12/85	03/12/85
date complete				
SE GA	<.18	<.18	<.18	<.18
ug/ml	ug/g	ug/g	ug/g	ug/g
TOCSOL	0.08	0.07	0.01	<.01
%				
ZN E	31	32	15	190
ug/ml	ug/g	ug/g	ug/g	ug/g

PAGE 1

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Analytical Serv

REPORT

LAB # 85-02-186

03/07/86 17:45:01

REPORT Radian

10 Bl 4

Austin

ATTEN Ioby Walters

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 19

WORK ID soil sites 4 and 1

TAKEN DLR, TKU

TRANS Fed Ex

TYPE

P.O. # 214-114-04-30

INVOICE under separate cover

PREPARED Radian Analytical Services

BY 0501 MoPac Blvd

P.O. Box 9748

Austin, Texas 78766

ATTEN

PHONE (512) 494-4797

CERTIFIED BY

CONTACT CONOVER

Duplicate of report of 04/30/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between
50 and 100%.

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01	4G-1
02	4G-2
03	4G-3
04	1A-1
05	1A-2
06	1A-3
07	1B-1
08	1B-2
09	1B-3
10	1C-1
11	1C-1A
12	1C-2
13	1C-3

Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPE
AG CA	Arsenic, low level
BA E	Barium, ICPE
CD E	Cadmium, ICPE
CR E	Chromium, ICPE
CU E	Copper, ICPE
FE E	Iron, ICPE
HA CA	Mercury, Cold Vapor
HI E	Nickel, ICPE
MA IR	Oil and Grease, Infrared
MB CA	Lead, low level
PA IR	Phosphorus Digestion Method
PP E	Selenium Digestion Method
TO CA	Tellurium, low level
TR CA	Vanadium, low level
VA E	Zinc, ICPE

COMPORATION

PAGE 2

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Analytical Serv

RESULTS BY TEST

REPORT

LAB # 85-02-186

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	0.66 ug/g	1.2 ug/g	0.20 ug/g	0.38 ug/g	1.4 ug/g
AS GA	2.1 ug/g	1.4 ug/g	0.5* ug/g	1.7 ug/g	1.2 ug/g
BA E	78 ug/g	200 ug/g	30 ug/g	63 ug/g	99 ug/g
CD E	0.56 ug/g	0.29 ug/g	0.11 ug/g	0.40 ug/g	0.39 ug/g
CR E	9.4 ug/g	4.7 ug/g	3.0 ug/g	7.4 ug/g	3.9 ug/g
CU E	6.5 ug/g	3.1 ug/g	1.4 ug/g	4.6 ug/g	2.9 ug/g
FE E	9100 ug/g	3400 ug/g	2600 ug/g	6400 ug/g	1800 ug/g
HG GA	<.05 ug/g	<.05 ug/g	<.05 ug/g	<.05 ug/g	0.06 ug/g
NI E	7.3 ug/g	3.8 ug/g	1.6 ug/g	5.8 ug/g	3.4 ug/g
ONG IR	<10 ug/g	45 ug/g	<10 ug/g	<10 ug/g	<10 ug/g
PB GA	5.8 ug/g	2.5 ug/g	1.7 ug/g	5.5 ug/g	1.4 ug/g
PREP W	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
date complete					
PREP X	03/01/85	03/01/85	03/01/85	03/01/85	03/01/85
date complete					
SE GA	<.2 ug/g	<.2 ug/g	<.2 ug/g	<.2 ug/g	<.2 ug/g
ug/ml					

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Analytical Serv
REPORT
RESULTS BY TESTLAB # 85-02-186
CONTINUED FROM ABOVE

TOCSUL	0.13	0.04	0.03	0.91	0.20
%					
ZN E	16	31	9.9	43	1.4
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 06	Sample 07	Sample 08	Sample 09	Sample 10
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	0.22	0.23	1.3	0.47	0.87
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS GA	0.3*	1.3	1.0*	2.0	1.9
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA E	30	46	86	19	97
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD E	<.073	0.65	0.26	0.29	0.35
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR E	2.0	7.7	3.7	2.0	4.9
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CU E	1.3	4.1	2.5	1.2	7.9
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
FE E	2300	6500	1800	1900	3600
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
HG GA	0.05	<.05	<.05	0.05	0.12
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
NI E	1.3	6.3	2.8	1.3	3.9
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
ONG IR	<10	<10	<10	<10	130
ug/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB GA	1.4	5.6	1.3	1.4	6.2
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

CORPORATION

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Analytical Serv
RESULTS BY TEST

LAB # 85-02-186
CONTINUED FROM ABOVE

PREP_W	03/01/85	03/01/85	03/01/85	03/01/85
date complete				
PREP_X	03/01/85	03/01/85	03/01/85	03/01/85
date complete				
SE_GA	<.2	<.2	<.2	<.2
ug/ml	ug/g	ug/g	ug/g	ug/g
TOCSOL	0.03	3.69	0.07	0.08
%				0.21
ZN_E	<.11	21	<.15	1.9
ug/ml	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 11	Sample 12	Sample 13
default units	(entered units)	(entered units)	(entered units)
AG_E	0.71	1.3	<.073
ug/ml	ug/g	ug/g	ug/g
AS_GA	2.0	1.2	<.2
ug/ml	ug/g	ug/g	ug/g
BA_E	110	200	6.4
ug/ml	ug/g	ug/g	ug/g
CD_E	0.44	0.30	<.073
ug/ml	ug/g	ug/g	ug/g
CR_E	6.1	3.7	0.80
ug/ml	ug/g	ug/g	ug/g
CU_E	5.9	2.1	0.38
ug/ml	ug/g	ug/g	ug/g
FE_E	3100	2100	1200
ug/ml	ug/g	ug/g	ug/g
HG_CA	<.05	<.05	<.05
ug/ml	ug/g	ug/g	ug/g

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Analytical Setv
RESULTS BY TEST REPORT

LAB # 85-02-186
CONTINUED FROM ABOVE

NI_E	ug/ml	4.6	ug/g	3.2	ug/g	0.61	ug/g
ONG_IR		100	ug/g	<10	ug/g	<10	ug/g
PB_GA	mg/L	8.2	ug/g	1.3	ug/g	1.0	ug/g
PREP_W	ug/ml		ug/g		ug/g		ug/g
date complete		03/01/85		03/01/85		03/01/85	
PREP_X							
date complete		03/01/85		03/01/85		03/01/85	
SE_GA		<2	ug/g	<2	ug/g	<2	ug/g
ug/ml		0.25		2.21		0.05	
TOCSOL							
%							
ZN_E		8.4	ug/g	1.6	ug/g	<110	ug/g
ug/ml							

PAGE 1
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Analytical Serv

REPORT

LAB # 85-03-029

03/07/86 17:46:57

REPORT Radian

TO BL 4

Austin

PREPARED Radian Analytical Services

BY 8501 Mopac Blvd.

P.O. Box 9748

Austin, Texas 78766

ATTEN Joby Walters

ATTN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

SAMPLES 11

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

WORK ID soil sites 1, 3, 13

TAKEN TKW

TRANS TKW

TYPE

P.O. # 214-114-04-30

INV. # 5556

Duplicate of report of 04/30/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between
50 and 100%.

@ Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01	1E-1
02	1E-2
03	1E-3
04	3E-1
05	3E-2
06	3E-3
07	13A-1
08	13A-2
09	13B-1
10	13B-2
11	13B-2a

Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPE
AS CA	Arsenic, low level
BA E	Barium, ICPE
CD E	Cadmium, ICPE
CR E	Chromium, ICPE
CU F	Copper, ICPE
FE E	Iron, ICPE
HG CA	Mercury Cold Vapor
MN E	Manganese, ICPE
Ni E	Nickel, ICPE
Pb E	Lead and Grease, Infrared
PG CA	Lead, low level
PP E	Phosphorus Digestion Method
SG E	Selenium Digestion Method
TA CA	Tellurium, low level
TO E	Thiophene, low level
Zn E	Zinc, ICPE

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Analytical Serv

REPORT

LAB # 85-03-029

RESULTS BY TEST

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG_E	0.50 ug/g	1.5 ug/g	0.82 ug/g	0.28 ug/g	1.1 ug/g
AS_GA	1.3 ug/g	2.4 ug/g	0.4 ug/g	2.0 ug/g	2.5 ug/g
BA_E	110 ug/g	390 ug/g	26 ug/g	240 ug/g	150 ug/g
CD_E	0.42 ug/g	0.20 ug/g	0.34 ug/g	0.20 ug/g	0.91 ug/g
CR_E	3.8 ug/g	3.1 ug/g	3.9 ug/g	4.4 ug/g	6.0 ug/g
CU_E	2.2 ug/g	1.6 ug/g	0.96 ug/g	1.7 ug/g	4.5 ug/g
FE_E	2600 ug/g	840 ug/g	1500 ug/g	3700 ug/g	120 ug/g
HG_GA	0.14 ug/g	0.13 ug/g	0.16 ug/g	0.12 ug/g	0.14 ug/g
NI_E	2.6 ug/g	2.4 ug/g	0.63 ug/g	2.7 ug/g	9.2 ug/g
ONG_IR	50 mg/L	56 mg/L	55 mg/L	54 mg/L	83 mg/L
PB_GA	3.6 ug/g	0.61 ug/g	1.1 ug/g	4.2 ug/g	3.2 ug/g
PREP_W	03/08/85	03/02/85	03/08/85	03/08/85	03/08/85
date complete					
PREP_X	03/15/85	03/15/85	03/15/85	03/15/85	03/15/85
date complete					
SE_GA	2.7 ug/g	2.1 ug/g	2.3 ug/g	1.8 ug/g	1.6 ug/g

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Analytical Serv REPORT
RESULTS BY TEST

LAB # 85-03-029
CONTINUED FROM ABOVE

TOCSOL	0.20	4.00	0.03	0.09	0.50
%					
ZN E	20	1.2	2.6	29	20
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 06	Sample 07	Sample 08	Sample 09	Sample 10
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	<.20	1.6	1.4	<.20	0.54
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS GA	<.2	2.6	1.6	2.6	2.1
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA E	5.0	98	87	100	130
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD E	<.20	0.20	<.20	0.22	0.34
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR E	<.50	5.3	5.5	7.5	7.4
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CU E	<.50	9.1	7.1	7.5	7.4
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
FE E	570				
ug/ml	ug/g				
HG CA	0.13	0.38	0.24	0.14	0.12
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
MN E		2.5	120	330	550
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
NI E	<.30				
ug/ml	ug/g				
ONG IR	40	65	26	55	28
mg/L					

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RECEIVED: 03/04/85

Analytical Serv

REPORT

LAB # 85-03-029

RESULTS BY TEST

CONTINUED FROM ABOVE

PB GA	0.70	ug/g	7.6	ug/g	9.9	ug/g	2.0	ug/g
PREP W	03/08/85		03/08/85		03/08/85		03/08/85	
date complete								
PREP X	03/15/85		03/15/85		03/15/85		03/15/85	
date complete								
SE GA	1.2	ug/g	1.3	ug/g	1.3	ug/g	1.2	ug/g
ug/ml								
TOC SOL	0.04							
%								
ZN E	<.30	ug/g	23	ug/g	20	ug/g	18	ug/g
ug/ml								

TEST CODE	Sample 11
default units	(entered units)
AG E	0.70
ug/ml	ug/g
AS GA	3.1
ug/ml	ug/g
BA E	140
ug/ml	ug/g
CD E	0.59
ug/ml	ug/g
CR E	9.7
ug/ml	ug/g
CU E	9.5
ug/ml	ug/g
HG CA	0.16
ug/ml	ug/g

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-03-029

CONTINUED FROM ABOVE

MN E	210
ug/ml	ug/g
ONG IR	67
mg/L	
PB GA	7.2
ug/ml	ug/g
PREP W	03/08/85
date complete	
PREP X	03/15/85
date complete	
SE GA	2.2
ug/ml	ug/g
ZN E	25
ug/ml	ug/g

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Analytical Serv
03/07/86 17:48:37

LAB # 85-03-033

REPORT Radian
TO BL 4
Austin

ATTEN Toby Walters

CLIENT CANNON AFB
COMPANY Cannon AFB
FACILITY

SAMPLES 21

WORK ID soil sites 1 and 3 (VOAs)

TAKEN TKW, DLR

TRANS TKW

TYPE

P.O. # 214-114-04-30

INV. # 5267

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P.O. Box 7248

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Note: Detection limits for SW8010 abd SW8020 were 10 ug/Kg and 150 ug/Kg, respectively.

Duplicate of report of 03/25/85.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 1A-1
02 1A-2
03 1A-3
04 1B-1
05 1B-2
06 1B-3
07 1C-1
08 1C-2
09 1C-3
10 1D-1
11 1D-2
12 1D-3
13 1E-1
14 1E-2
15 1E-3

Analytical Serv TEST CODES and NAMES used on this report

SW8010 GC-HECD Halog. Vol. - SW846
SW8020 GC-PID Arom. Vol. - SW846

CORPORATION

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REPORT

LAB # 85-03-033

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SAMPLE IDENTIFICATION

15	1E-3	
16	3E-1	
17	3E-2	
18	3E-3	
19	3H-1	
20	3H-2	
21	3H-3	

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Analytical Serv
Results by Sample

LAB # 85-03-033

SAMPLE ID 1A-1

FRACTION Q1A
Date & Time Collected 02/16/85

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 03/05/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSQ
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropane	ND			
---	trans-1,2-Dichloropropene	ND			

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-033

Continued From Above

SAMPLE ID 1A-1

FRACTION 01A TEST CODE SW8010

Date & Time Collected 02/16/85

NAME GC-HECD Holog. Vol. - SW846

Category

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-03-033

SAMPLE ID 1A-1

FRACTION 01A TEST CODE SWB020 NAME GC-PID Atom. Vol. - SWB46
Date & Time Collected 02/16/85 Category

DATA FILE _____ DATE INJECTED 03/08/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND ;	—	1,3-Dichlorobenzene	ND
—	Toluene	ND ;	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND ;	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 1A-2

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/16/85

Category

DATA FILE	B	DATE INJECTED	03/06/85	ANALYST	RAA	VERIFIED BY	USG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

LABORATORY CORPORATION

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

Continued From Above

SAMPLE ID 1A-2

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/16/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-03-033

SAMPLE ID 1A-2

FRACTION 02A TEST CODE SWB020
Date & Time Collected 02/16/85

NAME GC-PID Atom. Vol. - SW846
Category

DATA FILE _____ D _____ DATE INJECTED 03/08/85 ANALYST _____ CAC _____ VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED _____ Q _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1A-3

FRACTION 03A
Date & Time Collected 02/24/85

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE _____ CONC. FACTOR _____	B _____	DATE INJECTED 03/06/85	ANALYST _____ INSTRUMENT _____	RAA _____ b _____	VERIFIED BY JSG COMPOUNDS DETECTED 0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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Analytical Serv REPORT
Results by Sample

LAB # 85-03-033
Continued From Above

SAMPLE ID 1A-3

FRACTION 03A TEST CODE SWB010 NAME GC-HECD Haloq. Vol. - SWB46
Date & Time Collected 02/24/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 1A-3

FRACTION 03A

TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/24/85

Category

DATA FILE _____ D _____ DATE INJECTED 03/08/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 1B-1

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/24/85

Category

DATA FILE	B	DATE INJECTED	03/05/85	ANALYST	RA	VERIFIED BY	USE
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 1B-1

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REPORT

Results by Sample

LAB # 85-03-033

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FRACTION 04A TEST CODE SW8010 NAME GC-HECD H3log. Vol. - SW846
Date & Time Collected 02/24/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 1B-1

FRACTION 04A TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/24/85

Category

DATA FILE - D DATE INJECTED 03/03/85 ANALYST RAA VERIFIED BY JSC
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED C

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND :	—	1,3-Dichlorobenzene	ND
—	Toluene	ND :	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND :	—	1,4-Dichlorobenzene	ND
—		:	—		

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified

ND = t detected at detection limit of 1 ug/Kg unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1B-2

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/24/85

Category

DATA FILE	B	DATE INJECTED	03/04/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethane	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethane	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-03-033

Results by Sample

Continued From Above

SAMPLE ID 1B-2

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 02/24/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1B-2

FRACTION 05A TEST CODE SW8020

NAME GC-PID Atom Vol. - SWB46

Date & Time Collected 02/24/85

Category

DATA FILE D DATE INJECTED 03/08/85 ANALYST RAA VERIFIED BY JSG
 CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND :	---	1,3-Dichlorobenzene	ND
---	Toluene	ND :	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND :	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number of retention time on chromatogram.
 All results reported in ug/kg unless otherwise specified.
 ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1B-3

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/24/85

Category

DATA FILE	B	DATE INJECTED	03/07/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-03-033

Results by Sample

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SAMPLE ID 1B-3

FRACTION 06A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/24/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 1B-3

FRACTION 06A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/24/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 03/08/85

ANALYST _____
INSTRUMENT _____

RAA _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/l unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-03-033

SAMPLE ID 1C-1

FRACTION 07A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE	B	DATE INJECTED	03/07/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-03-033

Results by Sample

Continued From Above

SAMPLE ID 1C-1

FRACTION Q/A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-03-033

SAMPLE ID 1C-1

FRACTION 07A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 02/25/85 Category

DATA FILE - D DATE INJECTED 03/03/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR - - INSTRUMENT 4 COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in ug/Kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 1C-2

FRACTION Q8A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE
CONC. FACTOR

B

DATE INJECTED 03/07/85

ANALYST
INSTRUMENTRAA
bVERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-033

Continued From Above

SAMPLE ID 1C-2

FRACTION 08A

TEST CODE SW8010

NAME GC-HECD Hsloq. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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REPORT
Results by Sample

LAB # 85-03-033

SAMPLE ID 1C-2

FRACTION 08A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected 02/25/85 Category

DATA FILE _____ D DATE INJECTED 03/13/85 ANALYST _____ CAC VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in -- 02/25/85 unless otherwise specified.

ND = not detected at detection limit of 1 ug/l unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1C-3

FRACTION 09A

TEST CODE SW2010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE	B	DATE INJECTED	03/07/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 1C-3

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REPORT

Results by Sample

LAB # 85-03-033

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FRACTION 09A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 02/25/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

AD-A175 325

INSTALLATION RESTORATION PROGRAM PHASE II
CONFIRMATION/QUANTIFICATION STA. (U) RADIAN CORP AUSTIN
TX SEP 86 F33615-84-D-4482

5/9

UNCLASSIFIED

F/G 13/2 ML





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

LABORATORY CORPORATION

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Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1C-3

FRACTION 09A TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/13/85

ANALYST
INSTRUMENT

CAC

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g}/\text{kg}$, unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-03-033

SAMPLE ID ID-1

FRACTION 10A

TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE	B	DATE INJECTED	03/07/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

LAB # 85-03-033

Results by Sample

Continued From Above

SAMPLE ID 1D-1

FRACTION 10A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 1D-1

FRACTION 10A

TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/13/85

ANALYST

MCL

VERIFIED BY JSG

INSTRUMENT

d

COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

—

Benzene

ND

—

1,3-Dichlorobenzene

ND

—

Toluene

ND

—

1,2-Dichlorobenzene

ND

—

Ethyl Benzene

ND

—

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/kg}$ unless otherwise specified

ND = not detected at detection limit of $1 \mu\text{g/l}$ unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1D-2

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE	B	DATE INJECTED	03/07/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethane	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethane	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,2-Dichloropropene	ND					

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REPORT

Results by Sample

LAB # 85-03-033

Continued From Above

SAMPLE ID 1D-2

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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 LAB # 85-03-033
 FRACTION 11A
 TEST CODE SW8020
 NAME GC-PID Arom. Vol. - SW846
 Date & Time Collected 02/25/85
 Category

DATA FILE _____ D _____
 DATE INJECTED 03/13/85
 ANALYST _____ MCL _____
 INSTRUMENT _____
 CONC. FACTOR _____
 VERIFIED BY JSQ
 COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
 All results reported in µg/lg unless otherwise specified.
 ND = not detected at detection limit of 1 µg/lg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1D-3

FRACTION 12A
Date & Time Collected 02/25/85

TEST CODE SW8010 NAME GC-HECD Hslog Vol. - SW846
Category

DATA FILE	B	DATE INJECTED	03/07/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3 Dichloropropane	ND					

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Analytical Serv

Results by Sample

REPORT

LAB # 85-03-033

Continued From Above

SAMPLE ID 1D-3

FRACTION 12A

TEST CODE SW8010

NAME GC-HECD H₂log. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1D-3

FRACTION 12A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE _____ D _____ ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED _____ G

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/gg unless otherwise specified.
ND = not detected at detection limit of 1 ug/l unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1E-1

FRACTION 13A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 02/25/85

Category

DATA FILE	A	DATE INJECTED	03/00/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID 1E-1

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REPORT

Results by Sample

LAB # 85-03-033

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FRACTION 13A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY

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 Results by Sample
 REPORT
 LAB # 85-03-033
 FRACTION 13A
 TEST CODE SW8020
 NAME GC-PID Atom. Vol. - SW846
 Date & Time Collected 02/25/85
 Category

DATA FILE _____ D _____
 CONC. FACTOR _____
 DATE INJECTED 03/13/85
 ANALYST _____ MCL _____
 INSTRUMENT _____ d _____
 VERIFIED BY JSG
 COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/Lg unless otherwise specified.
 ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

WATKINS CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-03-033

SAMPLE ID 1E-2 FRACTION 14A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 02/25/85 Category

DATA FILE _____ CONC. FACTOR _____	A _____	DATE INJECTED 03/08/85	ANALYST _____ INSTRUMENT _____	MCL _____ a _____	VERIFIED BY JSG COMPOUNDS DETECTED _____
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

WALSH CORPORATION

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REPORT

Results by Sample

LAB # 85-03-033

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SAMPLE ID 1E-2

FRACTION 14A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY

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LAB # 85-03-033

Results by Sample

SAMPLE ID 1E-2

FRACTION 14A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846
Date & Time Collected 02/25/85 Category

DATA FILE _____ D _____ DATE INJECTED 03/13/85 ANALYST _____ MCL _____ VERIFIED BY JSQ
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND ;	—	1,3-Dichlorobenzene	ND
—	Toluene	ND ;	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND ;	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/ unless otherwise specified.

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Analytical Serv

Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 1E-3

FRACTION 15A

TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 02/25/85

Category

DATA FILE _____ A

DATE INJECTED 03/08/85

ANALYST _____

MCL _____

VERIFIED BY JSG

CONC. FACTOR _____

INSTRUMENT _____

COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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LAB # 85-03-033

Results by Sample

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SAMPLE ID 1E-3

FRACTION 15A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/25/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-03-033

SAMPLE ID 1E-3

FRACTION 15A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/25/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 03/13/85

ANALYST _____
INSTRUMENT _____

RAA _____

VERIFIED BY JSC
COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/Kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-03-033

REPORT

SAMPLE ID 3E-1

FRACTION 16A
Date & Time Collected 02/23/85

TEST CODE SW8010 NAME GC-HECD H3100 Vol. - SW846
Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 03/08/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSC
COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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LAB # 85-03-033

Results by Sample

Continued From Above

SAMPLE ID 3E-1

FRACTION 16A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/23/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 85-03-033

SAMPLE ID 3E-1

FRACTION 16A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846
Date & Time Collected 02/23/85 Category

DATA FILE _____ D _____ DATE INJECTED 03/13/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND	—	1,3-Dichlorobenzene	ND
—	Toluene	ND	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in ug/kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/ unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 3E-2

FRACTION 17A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/23/85

Category

DATA FILE	A	DATE INJECTED	03/08/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

Results by Sample

LAB # 85-03-033

Continued From Above

SAMPLE ID 3E-2

FRACTION 17A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/23/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY

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REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 3E-2

FRACTION 17A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/23/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/13/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSC
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/Kg, unless otherwise specified.

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REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 3E-3

FRACTION 18A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/23/85

Category

DATA FILE	A	DATE INJECTED	03/08/85	ANALYST	MCL	VERIFIED BY	USG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropane	ND					

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

Continued From Above

SAMPLE ID 3E-3

FRACTION 18A

TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/23/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 3E-3

FRACTION 18A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/23/85

Category

DATA FILE - D DATE INJECTED 03/13/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number at retention time on chromatogram.
All results reported in ug/Kg unless otherwise specified.
ND = not detected at detection limit of 1 ug/ unless otherwise specified.

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Analytical Serv

Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 3H-1

FRACTION 19A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/22/85

Category

DATA FILE	A	DATE INJECTED	03/08/85	ANALYST	MCL	VERIFIED BY	JSC
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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SAMPLE ID 3H-1

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REPORT

Results by Sample

LAB # 85-03-033

Continued From Above

FRACTION 19A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/22/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 3H-1

FRACTION 19A

TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/22/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/13/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED

d

Q

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

REPORT

LAB # 85-03-033

SAMPLE ID 3H-2

FRACTION 20A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/22/85

Category

DATA FILE	A	DATE INJECTED	03/08/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

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REPORT

Results by Sample

LAB # 85-03-033

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SAMPLE ID 3H-2

FRACTION 20A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/22/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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REPORT

Results by Sample

LAB # 85-03-033

SAMPLE ID 3H-2

FRACTION 20A

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 02/22/85

Category

DATA FILE
CONC. FACTOR

DATE INJECTED 03/13/85

D

ANALYST
INSTRUMENT

RAA
d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/g}$ unless otherwise specified

ND = not detected at detection limit of $1 \mu\text{g/g}$ unless otherwise specified.

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REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 3H-3

FRACTION 21A

TEST CODE SW8010

NAME GC-HECD Hsloq. Vol. - SW846

Date & Time Collected 02/22/85

Category

DATA FILE	A	DATE INJECTED	03/08/85	ANALYST	CAC	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT		COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,4-Dichloropropene	ND					

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SAMPLE ID 3H-3

Analytical Serv

REPORT

Results by Sample

LAB # 85-03-033

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FRACTION 21A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/22/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-033

Results by Sample

SAMPLE ID 3H-3

FRACTION 21A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/22/85

Category

DATA FILE D DATE INJECTED 03/13/85 ANALYST RAA VERIFIED BY JSG
CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND :	—	1,3-Dichlorobenzene	ND
—	Toluene	ND :	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND :	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-03-033

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01B	:	DUP_NS
02B	:	DUP_NS
03B	:	DUP_NS
04B	:	DUP_NS
05B	:	DUP_NS
06B	:	DUP_NS
07B	:	DUP_NS
08B	:	DUP_NS
09B	:	DUP_NS
10B	:	DUP_NS
11B	:	DUP_NS
12B	:	DUP_NS
13B	:	DUP_NS
14B	:	DUP_NS
15B	:	DUP_NS
16B	:	DUP_NS
17B	:	DUP_NS
18B	:	DUP_NS
19B	:	DUP_NS
20B	:	DUP_NS
21B	:	DUP_NS

INCORPORATION

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Analytical Serv

REPORT

03/07/86 17:56:09

LAB # 85-03-034

REPORT Radian

TO BL 4

Austin

ATTEN Toby Walters

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 7

WORK ID soil sites 3 and 13 (VOAs)

TAKEN TKW

TRANS TKW

TYPE

P.O. # 214-114-04-30

INV. # 5268

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P.O. Box 9748

Austin, Texas 78766

ATTEN

PHONE (512) 454-4777

CERTIFIED BY

CONTACT CONOVER

Note: Detection limits for SW8010 and SW8020 were 10 ug/Kg and 150 ug/Kg, respectively.

Duplicate of report of 03/25/85.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	31-1
02	31-2
03	31-3
04	13A-1
05	13A-2
06	13B-1
07	13B-2

Analytical Serv TEST CODES and NAMES used on this report

SW8010 GC-HECD Haloq. Vol. - SW846
SW8020 GC-PID Arom. Vol. - SW846

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-034

SAMPLE ID 31-1

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected not specified

Category

DATA FILE _____ A _____ DATE INJECTED 03/08/85 ANALYST _____ RAA _____ VERIFIED BY JSG _____
 CONC. FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED 0 _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,1-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

LAB # 85-03-034

Results by Sample

Continued From Above

SAMPLE ID 31-1

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD H3log. Vol. - SW846

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-03-034

Results by Sample

SAMPLE ID 31-1

FRACTION 01A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
Date & Time Collected not specified Category

DATA FILE _____ D DATE INJECTED 03/14/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified

ND = not detected at detection limit of 1 $\mu\text{g}/\text{g}$ unless otherwise specified.

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Analytical Serv

Results by Sample

REPORT

LAB # 85-03-034

SAMPLE ID 31-2

FRACTION 02A

TEST CODE SW8010 NAME GC-HECD H310Q Vol. - SW846

Date & Time Collected not specified

Category

DATA FILE	A	DATE INJECTED	03/03/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethane	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,2-Dichloropropene	ND					

INFORMATION

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Analytical Serv

Results by Sample

LAB # 85-03-034

Continued From Above

SAMPLE ID 31-2

FRACTION 02A

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-034

SAMPLE ID 31-2

FRACTION 02A

TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected not specified

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/14/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in $\mu\text{g/g}$ unless otherwise specified

ND = not detected or detection limit of $1 \mu\text{g/kg}$ unless otherwise specified

COMPARISON

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-034

SAMPLE ID 31-3

FRACTION 03A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/22/85

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 03/08/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,2-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

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Analytical Serv

Results by Sample

REPORT

LAB # 85-03-034

Continued From Above

SAMPLE ID 31-3

FRACTION 03A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/22/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

COMPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 85-03-034

SAMPLE ID 31-3

FRACTION 03A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/22/85

Category

DATA FILE: _____ D DATE INJECTED 03/14/85 ANALYST _____ MCL _____ VERIFIED BY JSG
 CONC. FACTOR: _____ INSTRUMENT _____ d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND :	---	1,3-Dichlorobenzene	ND
---	Toluene	ND :	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND :	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number of retention time on chromatogram

All results reported in sample unless otherwise specified

ND = not detected at detection limit of 1 ug/g unless otherwise specified

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-034

SAMPLE ID 13A-1

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/27/85

Category

DATA FILE	A	DATE INJECTED	03/10/85	ANALYST	MCL	VERIFIED BY	JSC
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloroethane	ND					
	1,3-Dichloropropene	ND					
	trans-1,2-Dichloropropene	ND					

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REPORT

Results by Sample

LAB # 85-03-034

Continued From Above

SAMPLE ID 13A-1

FRACTION 04A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/27/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-03-034

Results by Sample

SAMPLE ID 13A-1

FRACTION 04A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 02/27/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/14/85

ANALYST

MCL

VERIFIED BY JSC

INSTRUMENT

d

COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/kg unless otherwise specified

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-034

SAMPLE ID 13A-2

FRACTION 05A

TEST CODE SW2010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/27/85

Category

DATA FILE	A	DATE INJECTED 03/10/85	ANALYST	MCL	VERIFIED BY JSG
CONC. FACTOR			INSTRUMENT	a	COMPOUNDS DETECTED
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon tetrachloride	ND			
	Bromochloromethane	ND			
	1,1,1-Trichloroethane	ND			
	trans-1,2-Dichloropropene	ND			

CORPORATION

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SAMPLE ID 13A-2

Analytical Serv
Results by Sample

REPORT
LAB # 85-03-034
Continued From Above

FRACTION 05A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 02/27/85 Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

LAB # 85-03-034

Results by Sample

SAMPLE ID 13A-2

FRACTION 05A

TEST CODE SW8020

NAME GC-PID Aron. Vol. - SW846

Date & Time Collected 02/27/85

Category

DATA FILE D DATE INJECTED 02/14/85 ANALYST MCL VERIFIED BY JSB
CONC. FACTOR 1 INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in this report are for other than specified

ND = not detected or detection limit not met, unless otherwise specified

— CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-034

SAMPLE ID 13B-1

FRACTION 06A

TEST CODE SW2010

NAME GC-HECD H₂log. Vol. - SW846

Date & Time Collected 02/27/85

Category

DATA FILE
CUNC. FACTOR

A

DATE INJECTED 03/10/85

ANALYST
INSTRUMENT

MCL

VERIFIED BY JSC
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon Tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,1-Dichloropropene	ND			
---	trans-1,3-Dichloropropene	ND			

**LABORATORY
CORPORATION**

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REPORT

LAB # 85-03-034

Results by Sample

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SAMPLE ID 13B-1

FRACTION 06A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/27/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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 Results by Sample
 REPORT
 LAB # 85-03-034
 FRACTION 06A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
 Date & Time Collected 02/27/85 Category

DATA FILE _____ D DATE INJECTED 03/14/85 ANALYST _____ RAA VERIFIED BY JSG
 CONC FACTOR _____ INSTRUMENT _____d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND :	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND :	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND :	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT
 SCAN = scan number or retention time on chromatogram
 All results reported in $\mu\text{g/g}$ unless otherwise specified.
 ND = not detected at detection limit of 1 $\mu\text{g/g}$, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

LAB # 85-03-034

SAMPLE ID 13B-2

FRACTION 07A TEST CODE SW2010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 02/27/85

Category

DATA FILE _____ A _____ DATE INJECTED 03/10/85 ANALYST _____ MCL _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropene	ND			
_____	trans-1,3-Dichloropropene	ND			

CONFIRMATION

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Analytical Serv

REPORT

LAB # 85-03-034

Results by Sample

Continued From Above

SAMPLE ID 13B-2

FRACTION 07A

TEST CODE SW8010

NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected 02/27/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-034

SAMPLE ID 13B-2

FRACTION Q/A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 02/27/85

Category

DATA FILE
CONC. FACTOR

DATE INJECTED 03/14/85

ANALYST
INSTRUMENT

VERIFIED BY JSC
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time or chromatogram

All results reported in mg/L unless otherwise specified

ND = not detected or detection limit of 1 mg/L unless otherwise specified

COMPORATION

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Analytical Serv

REPORT

LAB # 85-03-034

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01B	:	DUP_NS
02B	:	DUP_NS
03B	:	DUP_NS
04B	:	DUP_NS
05B	:	DUP_NS
06B	:	DUP_NS
07B	:	DUP_NS

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Analytical Serv

REPORT

LAB # 85-03-291

03/07/86 17:59:18

REPORT Radian
TO BL 4
Austin

PREPARED Radian Analytical Services

BY 8501 Mopac Blvd

P.O. Box 9743

Austin, Texas 78765

ATTEN Joby Walters

ATTEN

PHONE (512) 454-4797

CLIENT CANNON AFB
COMPANY Cannon AFB
FACILITY
SAMPLES 12

WORK ID soils, QA and entomology runs
TAKEN WB
TRANS TW
TYPE

P.O. # 214-114-04-30
INV. # 5791

CERTIFIED BY

CONTACT CONOVER

Note: Detection limits for SW8010 and SW8020 were 10 ug/Kg and 150 ug/Kg, respectively. Second column confirmation performed for SW8010, split 05. Dash 06C, toxaphene very weathered and partially degraded. Organophosphate pest reported in ug/kg.

Duplicate of report of 06/05/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

* Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01 SI-1A
02 SB-2C-1A
03 SB-9A-2A
04 SB-12B-1A
05 SB-17A-1A
06 SB-17A-1
07 SB-17A-2
08 SB-17A-3
09 SB-17A-4
10 SB-17B-1
11 SB-17B-2
12 SB-17B-2A

Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPE	NI E	Nickel, ICPE
AS GA	Asbestos, low level	ONG IR	Oil and Grease, Infrared
BA F	Barium, ICPE	ORG P	Organophosphate pesticides
CB E	Cadmium, ICPE	PB GA	Lead, low level
CC F	Chromium, ICPE	PESTES	EPA 608 Pesticides by EC
CU F	Copper, ICPE	PREP W	Special Digestion Method
CU OT	Cu weight of solid sample	PREP X	Special Digestion Method
EA 902	Extraction only-5098 Herb	SE GA	Selenium, low level
EA 608	Extraction only-608	SW8010	GC-HECD Halos Vol - SW846
EA 608	Extraction only-608	SW8020	GC-EID Aroclor Vol - SW846
EA F	Iron, ICPE	TC501	TIC in solids
HA 608	Heating, GC Vapor	ZN E	Zinc, ICPE

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Analytical Serv

REPORT

LAB # 85-03-291

RESULTS BY TEST

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AC E	<2	<2			
ug/ml	ug/g	ug/g			
AS GA	3.1	5.0			
ug/ml	ug/g	ug/g			
BA E	48	57			
ug/ml	ug/g	ug/g			
CD E	<2	<2			
ug/ml	ug/g	ug/g			
CR E	3.4	4.7			
ug/ml	ug/g	ug/g			
CU E	4.2	4.5			
ug/ml	ug/g	ug/g			
FE E	3900	5000			
ug/ml	ug/g	ug/g			
HG CA	0.17	0.09			
ug/ml	ug/g	ug/g			
NI E	3.2	8.5			
ug/ml	ug/g	ug/g			
ONG IR	<10	<10	<10	<10	<10
ug/L	ug/g	ug/g	ug/g	ug/g	ug/g
PB GA	5.3	2.6	5.3	69	2.3
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
PREP W	04/22/85	04/22/85	04/22/85	04/22/85	04/22/85
date complete					
PREP X	04/01/85	04/01/85	04/01/85	04/01/85	04/01/85
date complete					
SE GA	1.3	1.8			
ug/ml	ug/g	ug/g			

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Analytical Serv
RESULTS BY TEST

LAB # 85-03-291
CONTINUED FROM ABOVE

TOCSOL	0.58	0.14
%		
ZN E	9.0	16
ug/ml	ug/g	ug/g

TEST CODE	Sample 06	Sample 07	Sample 08	Sample 09	Sample 10
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
AG E	0.27*	1.8	1.3	<2	0.67*
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
AS GA	4.1	2.3	1.4	<2	1.8
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
BA E	150	100	77	4.7	150
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CD E	<2	0.23*	<2	<2	<2
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CR E	3.5	3.7	3.3	0.5*	2.2*
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
CU E	3.1	3.2	2.0	0.1*	1.7
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
DRY WT	8	15	13	2	7
% moisture					
EX 509	04/02/85	04/02/85	04/02/85	04/02/85	04/02/85
date complete					
EX 608	04/02/85	04/02/85	04/02/85	04/02/85	04/02/85
date complete					
EX NDS	04/02/85	04/02/85	04/02/85	04/02/85	04/02/85
date complete					
FE E	3400	1600	780	550	1800
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

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Analytical Serv

REPORT

LAB # 85-03-291

RESULTS BY TEST

CONTINUED FROM ABOVE

HG CA	0.09	0.10	0.10	0.04	0.08
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
NI E	3.3	3.3	1.7	0.64*	2.9
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
PREP X	04/01/85	04/01/85	04/01/85	04/01/85	04/01/85
date complete					
SE GA	2.1	1.9	2.5	2.0	2.0
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g
TOCSOL	0.28	0.27	0.03	<01	0.07
%					
ZN E	12	2.8	1.8	4.9	68
ug/ml	ug/g	ug/g	ug/g	ug/g	ug/g

TEST CODE	Sample 11	Sample 12
default units	(entered units)	(entered units)
AG E	<2	<2
ug/ml	ug/g	ug/g
AS GA	5.6	2.0
ug/ml	ug/g	ug/g
BA E	64	133
ug/ml	ug/g	ug/g
CD E	<2	<2
ug/ml	ug/g	ug/g
CR E	4.7	1.4*
ug/ml	ug/g	ug/g
CV E	3.8	0.07
ug/ml	ug/g	ug/g
DRY WT	13	7
% moisture		

CORPORATION

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-03-291

CONTINUED FROM ABOVE

EX 509	04/02/85	04/02/85
date complete		
EX 608	04/02/85	04/02/85
date complete		
EX NOS	04/02/85	04/02/85
date complete		
FE E	5700	1700
ug/ml	ug/g	ug/g
HG CA	0.24	0.10
ug/ml	ug/g	ug/g
NI E	4.5	2.4
ug/ml	ug/g	ug/g
PREP X	04/01/85	04/01/85
date complete		
SE GA	1.6	1.9
ug/ml	ug/g	ug/g
TOCSOL	0.44	0.04
%		
ZN E	26	41
ug/ml	ug/g	ug/g

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID 51-1A

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 03/11/85

Category

DATA FILE	A	DATE INJECTED	03/28/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	C
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
---	Chloromethane	ND	---	Trichloroethane	ND		
---	Bromomethane	ND	---	Dibromochloromethane	ND		
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND		
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND		
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND		
---	Trichlorofluoromethane	ND	---	Bromoform	ND		
---	1,1-Dichloroethane	ND	---	1,1,2,2-Tetrachloroethane	ND		
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND		
---	trans-1,2-Dichloroethane	ND	---	Chlorobenzene	ND		
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND		
---	trans-1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND		
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND		
---	Carbon Tetrachloride	ND					
---	Bromodichloromethane	ND					
---	trans-1,2-Dichloroethane	ND					
---	trans-1,2-Dichloroethane	ND					

CORPORATION

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID ST-1A

FRACTION 01A

TEST CODE SW8010

NAME GC-HECD H3log Vol. - SW846

Date & Time Collected 03/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID S1-1A

FRACTION 01A

TEST CODE SW8020

NAME GC-PID

ArOm Vol. - SW846

Date & Time Collected 03/11/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/28/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND

1,3-Dichlorobenzene

ND

Toluene

ND

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID SB-2C-1A

FRACTION 02A
Date & Time Collected 03/11/85

TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Category

DATA FILE	A	DATE INJECTED	03/28/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

LABORATORY CORPORATION

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID SB-2C-1A

FRACTION 02A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 03/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID SB-20-1A

FRACTION 02A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 03/11/85

Category

DATA FILE _____ DATE INJECTED 03/28/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.
All results reported in _____ unless otherwise specified.
ND = not detected at detection limit of 1 ug/g unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID SB-9A-2A

FRACTION 03A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 03/11/85

Category

DATA FILE _____ A _____ DATE INJECTED 03/28/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ a _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1, 1, 2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1, 3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1, 1-Dichloroethene	ND	_____	1, 1, 2, 2-Tetrachloroethane	ND
_____	1, 1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1, 2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1, 3-Dichlorobenzene	ND
_____	1, 2-Dichloroethane	ND	_____	1, 2-Dichlorobenzene	ND
_____	1, 1, 1-Trichloroethane	ND	_____	1, 4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1, 2-Dichloropropene	ND			
_____	trans-1, 3-Dichloropropene	ND			

CORPORATION

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID SB-9A-2A

FRACTION 03A TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 03/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

WB46

LABORATORY

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-9A-2A

FRACTION 03A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 03/11/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/28/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND :	---	1,3-Dichlorobenzene	ND
---	Toluene	ND :	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND :	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

Continued From Above

SAMPLE ID SB-15B-1A

FRACTION 04A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 03/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-15B-1A

FRACTION 04A

TEST CODE SW8020

NAME GC-PID Arom.

Vol. - SWB46

Date & Time Collected 03/11/85

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/28/85

ANALYST
INSTRUMENT

RAA
d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND ;

1,3-Dichlorobenzene

ND

Toluene

ND ;

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND ;

1,4-Dichlorobenzene

ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/l unless otherwise specified.

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID SB-19A-1A

FRACTION 03A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 03/11/85

Category

DATA FILE	A	DATE INJECTED	03/29/85	ANALYST	MCL	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	1
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethane	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
1	1,2-Dichloroethane	237			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,2-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID SB 19A-1A

FRACTION 05A

TEST CODE SW8010

NAME GC-HECD Hsloq. Vol. - SW846

Date & Time Collected 03/11/85

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT
Results by Sample

LAB # 85-03-291

SAMPLE ID SB-19A-1A

FRACTION 05A TEST CODE SW8020 NAME GC-PID Atom. Vol. - SW846
Date & Time Collected 03/11/85

Category

DATA FILE _____ D _____ DATE INJECTED 03/28/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LAB # 85-03-291

SAMPLE ID SB-19A-1A

SAMPLE # 05 FRACTIONS: A

Date & Time Collected 03/11/85

Category

ONE IR

210 PB GA

6/bn

6/5n

data complete

PREP X 04/01/85

date completed

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17A-1

FRACTION 06C

TEST CODE HERBES

NAME Herbicides EC

Date & Time Collected 11/27/84

Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED 04/19/85
ANALYST LII

VERIFIED BY LAK

COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	ND	25			
2,4,5-TP (Silvex)	ND	25			
2,4,5-T	ND	25			

NOTES AND DEFINITIONS FOR THIS REPORT

ND = not detected at the specified detection limit.
All results reported in ug/g unless otherwise specified.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17A-1

FRACTION 06C TEST CODE ORG P NAME Organophosphate pesticides
Date & Time Collected 11/27/84 Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED
ANALYST ANAL AB

VERIFIED BY LAK

PESTICIDE	RESULT	DET. LIMIT
Diazinon	ND	0.001
Dimeton	ND	0.001
Disulfoton	ND	0.001
Fenthion	ND	0.001
Naled	ND	0.001
Methyl Parathion	ND	0.001
Guthion	ND	0.001
EPN	ND	0.001
Malathion	ND	0.001

NOTES AND DEFINITIONS FOR THIS REPORT.

ND = not detected at the specified detection limit.
All results reported in micrograms/liter unless otherwise specified.

CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID SB-17A-1

FRACTION 06C

TEST CODE PESIES

NAME EPA 608 Pesticides by EC

Date & Time Collected 11/27/84

Category

DATA FILE 850329106C
CONC. FACTOR

DATE EXTRACTED 04/02/85
DATE INJECTED 04/16/85

ANALYST LHL

VERIFIED BY LAK
COMPOUNDS DETECTED 2

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	002	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	17P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	221
17P	101P	heptachlor epoxide	ND				

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SAMPLE ID SB-17A-1

Analytical Serv

Results by Sample

REPORT

LAB # 85-03-291

Continued From Above

FRACTION 06C

TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 11/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

CORPORATION

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17A-1

FRACTION 06A

TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 11/27/84

Category

DATA FILE	A	DATE INJECTED	03/29/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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SAMPLE ID SB-17A-1

CORPORATION

Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

Continued From Above

FRACTION 06A TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 11/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

P/ RE SA NC

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID SB-17A-1

FRACTION 06A

TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 11/27/84

Category

DATA FILE _____ D _____ DATE INJECTED 03/28/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND :	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND :	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND :	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN - scan number or retention time on chromatogram.
All results reported in _____ unless otherwise specified.
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID 58-17A-2

FRACTION 07C TEST CODE HERBES

NAME Herbicides EC

Date & Time Collected 11/27/84

Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED 04/19/85
ANALYST LHL

VERIFIED BY LAK

COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	283	25			
2,4,5-TP (Silvex)	ND	25			
2,4,5-T	ND	25			

NOTES AND DEFINITIONS FOR THIS REPORT

ND = not detected at the specified detection limit.
All results reported in ug/g unless otherwise specified.

CORPORATION

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 SAMPLE ID SB-17A-2

Analytical Serv
 Results by Sample

REPORT
 LAB # 85-03-291

FRACTION 07C
 Date & Time Collected 11/27/84

TEST CODE ORG P
 NAME Organophosphate pesticides

Category

DATE EXTRACTED 04/02/85
 CONCENTRATION FACTOR

DATE INJECTED
 ANALYST ANLAB

VERIFIED BY LAK

PESTICIDE	RESULT	DET. LIMIT
Diazinon	ND	0.001
Dimeton	ND	0.001
Disulfoton	ND	0.001
Fenthion	ND	0.001
Naled	ND	0.001
Methyl Parathion	ND	0.001
Guthion	ND	0.001
EPN	ND	0.001
Malathion	ND	0.001

NOTES AND DEFINITIONS FOR THIS REPORT.

ND = not detected at the specified detection limit.

All results reported in micrograms/liter unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17A-2

FRACTION O/C TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 11/27/84

Category

DATA FILE 850329107C
CONC. FACTOR

DATE EXTRACTED 04/02/85
DATE INJECTED 04/15/85

ANALYST LHL

VERIFIED BY LAK
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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Analytical Serv

Results by Sample

REPORT

LAB # 85-03-291

Continued From Above

SAMPLE ID SB-17A-2

FRACTION 07C

TEST CODE PESTIES

NAME EPA 608 Pesticides by EC

Date & Time Collected 11/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17A-2

FRACTION 07A

TEST CODE SW8010

NAME GC-HECD Hslog. Vol. - SW846

Date & Time Collected 11/27/84

Category

DATA FILE	A	DATE INJECTED	03/29/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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SAMPLE ID SB-17A-2

Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

Continued From Above

FRACTION 07A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17A-2

FRACTION O/A

TEST CODE SW8020

NAME GC-PID Arom

Vol. - SW846

Date & Time Collected 11/27/84

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/28/85

ANALYST
INSTRUMENT

RAA

d

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,3-Dichlorobenzene	ND
	Toluene	ND		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND		1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in mg/kg unless otherwise specified.

ND = not detected at detection limit of 1 µg/g unless otherwise specified.

AD-A175 325

INSTALLATION RESTORATION PROGRAM PHASE II

6/9

CONFIRMATION/QUANTIFICATION STA..(U) RADIAN CORP AUSTIN

TX SEP 86 F33615-84-D-4482

UNCLASSIFIED

F/G 13/2

NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17A-3

FRACTION OBC

TEST CODE HERBES

NAME Herbicides EC

Date & Time Collected 11/27/84

Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED 04/17/85
ANALYST LAL

VERIFIED BY LAK

COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	059	25			
2,4,5-TP (Silvex)	ND	25			
2,4,5-T	ND	25			

NOTES AND DEFINITIONS FOR THIS REPORT.

ND = not detected at the specified detection limit.
All results reported in ug/g unless otherwise specified.

CORPORATION

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 SAMPLE ID SB-17A-3

Analytical Serv
 Results by Sample

REPORT
 LAB # 85-03-291

FRACTION OBC TEST CODE ORG P NAME Organophosphate pesticides
 Date & Time Collected 11/27/84 Category

DATE EXTRACTED 04/02/85
 CONCENTRATION FACTOR

DATE INJECTED
 ANALYST ANLAB

VERIFIED BY LAK

PESTICIDE RESULT DET. LIMIT

Diazinon	ND	0.001
Dimeton	ND	0.001
Disulfoton	ND	0.001
Fenthion	ND	0.001
Naled	ND	0.001
Methyl Parathion	ND	0.001
Guthion	ND	0.001
EPN	ND	0.001
Malathion	ND	0.001

NOTES AND DEFINITIONS FOR THIS REPORT.
 ND = not detected at the specified detection limit.
 All results reported in micrograms/liter unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17A-3

FRACTION OBC

TEST CODE PESTES NAME EPA 608 Pesticides by EC

Date & Time Collected 11/27/84

Category

DATA FILE 85032910BC
CONC. FACTOR

DATE EXTRACTED 04/02/85
DATE INJECTED 04/15/85

ANALYST LHL

VERIFIED BY LAK
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID SB-17A-3

FRACTION OBC

TEST CODE PESIES

NAME EPA 608 Pesticides by EC

Date & Time Collected 11/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

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REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17A-3

FRACTION O8A

TEST CODE SW8010 NAME GC-HECD Hslog. Vol. - SW846

Date & Time Collected 11/27/84

Category

DATA FILE	A	DATE INJECTED	03/28/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
---	Chloromethane	ND	---	Trichloroethene	ND		
---	Bromomethane	ND	---	Dibromochloromethane	ND		
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND		
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND		
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND		
---	Trichlorofluoromethane	ND	---	Bromoform	ND		
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND		
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND		
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND		
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND		
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND		
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND		
---	Carbon Tetrachloride	ND	---				
---	Bromodichloromethane	ND	---				
---	1,2-Dichloropropane	ND	---				
---	trans-1,3-Dichloropropene	ND	---				

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Analytical Serv
Results by Sample

LAB # 85-03-291
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SAMPLE ID SB-17A-3

FRACTION 08A TEST CODE SWB010
Date & Time Collected 11/27/84

NAME GC-HECD H310g Vol. - SW846
Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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SAMPLE ID SB-17A-3

Analytical Serv

Results by Sample

LAB # 85-03-291

REPORT

FRACTION OBA TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846
Date & Time Collected 11/27/84 Category

DATA FILE D DATE INJECTED 03/29/85 ANALYST RAA VERIFIED BY JSB
CONC. FACTOR --- INSTRUMENT d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
<u>---</u>	Benzene	<u>ND</u> ;	<u>---</u>	1,3-Dichlorobenzene	<u>ND</u>
<u>---</u>	Toluene	<u>ND</u> ;	<u>---</u>	1,2-Dichlorobenzene	<u>ND</u>
<u>---</u>	Ethyl Benzene	<u>ND</u> ;	<u>---</u>	1,4-Dichlorobenzene	<u>ND</u>

NOTES AND DEFINITIONS FOR THIS REPORT
SCAN = scan number or retention time from chromatogram
All results reported in this report are unless otherwise specified.
ND = not detected at detection limit specified by GC, unless otherwise specified.

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SAMPLE ID SB-17A-4

Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

FRACTION 09C TEST CODE HERBES NAME Herbicides EC
Date & Time Collected 11/27/84 Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

COMPOUND	RESULT	DET. LIMIT	DATE INJECTED 04/17/85 ANALYST LIL	OTHER HERBICIDES	RESULT	DET. LIMIT	VERIFIED BY LAK
2,4-D	3.41	25					
2,4,5-TP (Silvex)	ND	25					
2,4,5-T	ND	25					

NOTES AND DEFINITIONS FOR THIS REPORT.
ND = not detected at the specified detection limit.
All results reported in ug/g unless otherwise specified.

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REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17A-4

FRACTION 09C TEST CODE ORG P

NAME Organophosphate pesticides

Date & Time Collected 11/27/84

Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED
ANALYST ANALAB

VERIFIED BY LAK

PESTICIDE RESULT DET. LIMIT

Diazinon ND 0.001

Dimeton ND 0.001

Disulfoton ND 0.001

Fenthion ND 0.001

Naled ND 0.001

Methyl Parathion ND 0.001

Guthion ND 0.001

EPN ND 0.001

Malathion ND 0.001

NOTES AND DEFINITIONS FOR THIS REPORT
ND = not detected at the specified detection limit.
All results reported in micrograms/liter unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17A-4

FRACTION 09C

TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 11/27/84

Category

DATA FILE 850329109C

DATE EXTRACTED 04/02/85

ANALYST LHL

VERIFIED BY LAK

CONC. FACTOR

DATE INJECTED 04/16/85

COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	13P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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SAMPLE ID SB-17A-4

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REPORT

Results by Sample

LAB # 85-03-291

Continued From Above

FRACTION 09C TEST CODE PESTES
Date & Time Collected 11/27/84

NAME EPA 608 Pesticides by EC

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SK-1/A-4

FRACTION 09A

TEST CODE SW2010

NAME GC-HECD Halog. Vol. - SWB46

Date & Time Collected 11/27/84

Category

DATA FILE	A	DATE INJECTED	03/27/85	ANALYST	RAA	VERIFIED 1 Y	USG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1, 1, 2-Trichloroethane	ND		
	Chloroethane	ND		cis-1, 3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1, 1-Dichloroethene	ND		1, 1, 2, 2-Tetrachloroethane	ND		
	1, 1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1, 2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1, 3-Dichlorobenzene	ND		
	1, 2-Dichloroethane	ND		1, 2-Dichlorobenzene	ND		
	1, 1, 1-Trichloroethane	ND		1, 4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1, 2-Dichloropropene	ND					
	trans-1, 3-Dichloropropene	ND					

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REPORT

LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID SB-17A-4

FRACTION 09A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/27/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17A-4

FRACTION 09A TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 11/27/84

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/29/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Benzene	ND	—	1,3-Dichlorobenzene	ND
—	Toluene	ND	—	1,2-Dichlorobenzene	ND
—	Ethyl Benzene	ND	—	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number of retention time on chromatogram.

All results reported in $\mu\text{g}/\text{kg}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g}/\text{L}$ unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17B-1

FRACTION 10C TEST CODE HERBES

NAME Herbicides EC

Date & Time Collected 11/28/84

Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED 04/19/85
ANALYST LHL

VERIFIED BY LAK

COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	ND	25			
2,4,5-TP (Silvex)	ND	25			
2,4,5-T	ND	25			

NOTES AND DEFINITIONS FOR THIS REPORT.

ND = not detected at the specified detection limit.

All results reported in ug/g unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17B-1

FRACTION 10C TEST CODE ORG P NAME Organophosphate pesticides
Date & Time Collected 11/28/84 Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED
ANALYST ANALAB

VERIFIED BY LAK

PESTICIDE	RESULT	DET. LIMIT
Diazinon	ND	0.001
Dimeton	ND	0.001
Disulfoton	ND	0.001
Fenthion	ND	0.001
Naled	ND	0.001
Methyl Parathion	ND	0.001
Guthion	ND	0.001
FPN	ND	0.001
Malathion	ND	0.001

NOTES AND DEFINITIONS FOR THIS REPORT:
ND = not detected at the specified detection limit.
All results reported in micrograms/liter unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-03-291

SAMPLE ID SB-1/B-1

FRACTION 10C

TEST CODE PESTS NAME EPA 608 Pesticides by EC

Date & Time Collected 11/28/84

Category

DATA FILE 850329110C
CONC. FACTOR

DATE EXTRACTED 04/02/85
DATE INJECTED 04/16/85

ANALYST LHL

VERIFIED BY LAW
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	84P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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REPORT

LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID 58-178-1

FRACTION 10C

TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 11/28/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number on chromatogram

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

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REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17B-1

FRACTION 10A

TEST CODE SW8010

NAME GC-HECD Hsloq Vol. - SW846

Date & Time Collected 11/28/84

Category

DATA FILE	A	DATE INJECTED	03/28/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	a	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND			Trichloroethene	ND	
	Bromomethane	ND			Dibromochloromethane	ND	
	Vinyl Chloride	ND			1,1,2-Trichloroethane	ND	
	Chloroethane	ND			cis-1,3-Dichloropropene	ND	
	Methylene Chloride	ND			2-Chloroethylvinyl Ether	ND	
	Trichlorofluoromethane	ND			Bromoform	ND	
	1,1-Dichloroethene	ND			1,1,2,2-Tetrachloroethane	ND	
	1,1-Dichloroethane	ND			Tetrachloroethylene	ND	
	trans-1,2-Dichloroethene	ND			Chlorobenzene	ND	
	Chloroform	ND			1,3-Dichlorobenzene	ND	
	1,2-Dichloroethane	ND			1,2-Dichlorobenzene	ND	
	1,1,1-Trichloroethane	ND			1,4-Dichlorobenzene	ND	
	Carbon Tetrachloride	ND					
	Bromochloromethane	ND					
	1,2-Dichloropropane	ND					
	trans-1,3-Dichloropropene	ND					

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID SB-178-1

FRACTION 10A

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/28/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/Kg unless otherwise specified

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17B-1

FRACTION 10A

TEST CODE SW8020

NAME GC-PID ATOM

Vol. - SW846

Date & Time Collected 11/28/84

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 03/27/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN - scan number or retention time on chromatogram.

All results reported in $\mu\text{g/g}$ unless otherwise specified.

ND - not detected at detection limit of $1 \mu\text{g/l}$, unless otherwise specified.

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Analytical Serv
Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17B-2

FRACTION 11C TEST CODE HERBES NAME Herbicides EC
Date & Time Collected 11/28/84 Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED 04/19/85
ANALYST LHL

VERIFIED BY LAK

COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	ND	25			
2,4,5-TP (Silvex)	ND	25			
2,4,5-T	ND	25			

NOTES AND DEFINITIONS FOR THIS REPORT:
ND = not detected at the specified detection limit.
All results reported in ug/g unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17B-2

FRACTION 11C

TEST CODE ORG P

NAME Organophosphate pesticides

Date & Time Collected 11/28/84

Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED
ANALYST AMI AB

VERIFIED BY LAK

PESTICIDE RESULT DET. LIMIT

Diazinon ND 0.001

Dimeton ND 0.001

Disulfoton ND 0.001

Fenthion ND 0.001

Naled ND 0.001

Methyl Parathion ND 0.001

Guthion ND 0.001

EPN ND 0.001

Malathion ND 0.001

NOTES AND DEFINITIONS FOR THIS REPORT

ND - not detected at the specified detection limit.
All results reported in micrograms/liter unless otherwise specified.

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-178-2

FRACTION 11C

TEST CODE PESIES NAME EPA 608 Pesticides by EC

Date & Time Collected 11/28/84

Category

DATA FILE 850329111C
CONC. FACTOR

DATE EXTRACTED 04/02/85
DATE INJECTED 04/15/85

ANALYST LHL

VERIFIED BY LAK
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	13P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

Continued From Above

SAMPLE ID SB-17B-2

FRACTION 11C

TEST CODE PESTES

NAME EPA 608 Pesticides by EC

Date & Time Collected 11/28/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

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REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17B-2

FRACTION 11A

TEST CODE SW8010

NAME GC-HECD Hslog Vol. - SWB46

Date & Time Collected 11/28/84

Category

DATA FILE	B	DATE INJECTED	03/27/85	ANALYST	RAA	VERIFIED BY	JSG
CONC.	FACTOR			INSTRUMENT	b	COMPOUNDS DETECTED	0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	1,2-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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RECEIVED: 03/28/85

SAMPLE ID SB-17B-2

Analytical Serv

Results by Sample

REPORT

LAB # 85-03-291

Continued From Above

FRACTION 11A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/28/84 d

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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RECEIVED: 03/28/85

Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17B-2

FRACTION 11A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 11/28/84

Category

DATA FILE _____ D _____ DATE INJECTED 03/29/85 ANALYST _____ RAA _____ VERIFIED BY JSC
 CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,3-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in $\mu\text{g/g}$ unless otherwise specified.

ND = not detected at detection limit of 1 $\mu\text{g/g}$ unless otherwise specified.

CORPORATION

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RECEIVED: 03/28/85

Analytical Serv

Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID SB-178-2A

FRACTION 12C TEST CODE HERBES

NAME Herbicides EC

Date & Time Collected 11/28/84

Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED 04/17/85
ANALYST LHL

VERIFIED BY LAK

COMPOUND	RESULT	DET. LIMIT	OTHER HERBICIDES	RESULT	DET. LIMIT
2,4-D	ND	25			
2,4,5-TP (Silvex)	ND	25			
2,4,5-T	ND	25			

NOTES AND DEFINITIONS FOR THIS REPORT

ND = not detected at the specified detection limit.
All results reported in ug/g unless otherwise specified.

CORPORATION

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RECEIVED: 03/28/85

Analytical Serv

REPORT

LAB # 85-03-291

Results by Sample

SAMPLE ID SB-17B-2A

FRACTION 12C

TEST CODE ORG P

NAME Organophosphate pesticides

Date & Time Collected 11/28/84

Category

DATE EXTRACTED 04/02/85
CONCENTRATION FACTOR

DATE INJECTED
ANALYST ANLAB

VERIFIED BY LAK

PESTICIDE	RESULT	DET. LIMIT
Diazinon	ND	0.001
Dimeton	ND	0.001
Disulfoton	ND	0.001
Fenthion	ND	0.001
Naled	ND	0.001
Methyl Parathion	ND	0.001
Guthion	ND	0.001
EPN	ND	0.001
Malathion	ND	0.001

NOTES AND DEFINITIONS FOR THIS REPORT

ND = not detected at the specified detection limit
All results reported in micrograms/liter unless otherwise specified.

CORPORATION

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RECEIVED: 03/28/85

Analytical Serv
Results by Sample

LAB # 85-03-291

SAMPLE ID SB-17B-2A

FRACTION 12C
Date & Time Collected 11/28/84

TEST CODE PESTES NAME EPA 608 Pesticides by EC
Category

DATA FILE 850329112C
CONC. FACTOR

DATE EXTRACTED 04/02/85
DATE INJECTED 04/16/85

ANALYST

LIHL

VERIFIED BY LAK
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	17P	107P	PCB-1254	ND
11P	95P	endosulfan I	ND	20P	108P	PCB-1221	ND
12P	96P	endosulfan II	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

CORPORATION

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Analytical Serv

REPORT
Results by Sample

LAB # 85-03-291
Continued From Above

SAMPLE ID SB-17B-2A

FRACTION 12C TEST CODE PESTES NAME EPA 608 Pesticides by EC
Date & Time Collected 11/28/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number on chromatogram

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit (See attached sheet).

CORPORATION

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RECEIVED: 03/28/85

Analytical Serv
Results by Sample

REPORT

LAB # 85-03-291

SAMPLE ID SB-17B-2A

FRACTION 12A TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846
Date & Time Collected 11/28/84

Category

DATA FILE	B	DATE INJECTED	03/28/85	ANALYST	RAA	VERIFIED BY	JSG
CONC. FACTOR				INSTRUMENT	b	COMPOUNDS DETECTED	Q
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT		
	Chloromethane	ND		Trichloroethene	ND		
	Bromomethane	ND		Dibromochloromethane	ND		
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND		
	Chloroethane	ND		cis-1,3-Dichloropropene	ND		
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND		
	Trichlorofluoromethane	ND		Bromoform	ND		
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND		
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND		
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND		
	Chloroform	ND		1,3-Dichlorobenzene	ND		
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND		
	1,1,1-trichloroethane	ND		1,4-Dichlorobenzene	ND		
	Carbon Tetrachloride	ND					
	Bromodichloromethane	ND					
	trans-Dichloropropene	ND					
	trans-1,3-Dichloropropene	ND					

CORPORATION

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RECEIVED: 03/28/85

SAMPLE ID SB-17B-2A

Analytical Serv

REPORT

Results by Sample

LAB # 85-03-291

Continued From Above

FRACTION 12A TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/28/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

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 RECEIVED: 03/28/85
 SAMPLE ID SB-17B-2A
 Analytical Serv
 Results by Sample
 FRACTION 12A TEST CODE SW8020 NAME GC-PID Atom Vol. - SW846
 Date & Time Collected 11/28/84 Category

LAB # 85-03-291

DATA FILE _____ D _____ DATE INJECTED 03/29/85 ANALYST _____ RAA _____ VERIFIED BY JSG
 CONC FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT
 SCAN = scan number or retention time on chromatogram
 All results reported to _____ mg/kg unless otherwise specified
 ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 1

RECEIVED: 04/08/85

Analytical Serv

REPORT

LAB # 85-04-059

03/07/86 18:07:48

REPORT Radian

TO BL 4

Austin

ATTEN Toby Walters

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 1

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P.O. Box 9948

Austin, Texas 78765

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Duplicate of report of 04/11/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between
50 and 100%.

o Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 trip blank

Analytical Serv TEST CODES and NAMES used on this report

GC 501 EPA Method 501/GC

GC 602 EPA Method 502/GC

CORPORATION

PAGE 2
RECEIVED: 04/08/85

Analytical Serv

REPORT

Results by Sample

LAB # 85-04-059

SAMPLE ID trip blank

FRACTION 01A

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 04/09/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane *	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane *	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene *	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane #	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene #	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethene	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Dibromochloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

CORPORATION

PAGE 3

RECEIVED: 04/08/85

Analytical Serv

REPORT

Results by Sample

LAB # 85-04-059

Continued From Above

SAMPLE ID trip blank

FRACTION Q1A

TEST CODE GC 601 NAME EPA Method 601/GC

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/L unless otherwise specified.

ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).

*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.

#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

CORPORATION

PAGE 4
RECEIVED: 04/08/85

Analytical Serv
Results by Sample

LAB # 85-04-059

SAMPLE ID trip blank

FRACTION Q1B TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected not specified Category

DATA FILE _____ D _____ DATE INJECTED 04/10/85 ANALYST _____ CAC _____ VERIFIED BY JSG
CONC FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND :	---	1,4-Dichlorobenzene	ND
---	Toluene	ND :	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND :	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND :			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
All results reported in (ug/l) unless otherwise specified.
ND = not detected at EPA detection limit method 602. (Federal Register, 12/3/79)

PAGE 1
RECEIVED: 04/17/85

Analytical Serv

REPORT

LAB # 85-04-133

03/07/86 18:08:18

REPORT Radian
TO B1 4
Austin

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd

P O Box 9948

Austin, Texas 78766

CERTIFIED BY

ATTN Toby Walters

PHONE (512) 454-4797

CONTACT CONOVER

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 2

WORK ID background soils

TAKEN IW

TRANS IW

TYPE

P. O. # 214-114-04-30

INV. # 5697

Duplicate of report of 05/20/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit
Potential error for such low values ranges between
50 and 100%.

† Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 background #1

02 background #2

Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPE
AS GA	Arsenic, low level
BA E	Barium, ICPE
CD E	Cadmium, ICPE
CR E	Chromium, ICPE
CO E	Copper, ICPE
FE E	Iron, ICPE
HG CA	Mercury, Cold Vapor
LI E	Lithium, ICPE
MM E	Manganese, low level
NA CA	Sodium, low level
PH E	Phosphorus, low level
PP E	Lead, low level
SE E	Selenium, low level
SI E	Silicon, low level
TA E	Titanium, low level
TR E	Tungsten, low level
VB E	Vanadium, low level
W E	Wolfram, low level
ZN E	Zinc, low level

CORPORATION

PAGE 2

RECEIVED: 04/17/85

Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-04-133

TEST CODE	Sample 01	Sample 02
default units	(entered units)	(entered units)
AG E	0.13*	0.58*
ug/ml	ug/g	ug/g
AS GA	7.9	13
ug/ml	ug/g	ug/g
BA E	56	61
ug/ml	ug/g	ug/g
CD E	0.41*	0.75*
ug/ml	ug/g	ug/g
CR E	9.6	14
ug/ml	ug/g	ug/g
CU E	<.08	7.8
ug/ml	ug/g	ug/g
FE E	8200	12,000
ug/ml	ug/g	ug/g
HG CA	0.39	0.41
ug/ml	ug/g	ug/g
NI E	5.9	10
ug/ml	ug/g	ug/g
ONG IR	<10	<10
mg/L	ug/g	ug/g
PB CA	18	7.0
ug/ml	ug/g	ug/g
PREP W	05/03/85	05/03/85
date complete		
PREP X	05/13/85	05/13/85
date complete		
SE GA	0.68	0.61
ug/ml	ug/g	ug/g

CORPORATION

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 85-04-133
CONTINUED FROM ABOVE

ZN E
ug/ml

23
ug/g

29
ug/g

CORPORATION

PAGE 1

RECEIVED: 04/24/85

Analytical Serv

REPORT

03/07/86 18:08:50

LAB # 85-04-169

REPORT Radion

TO BL 4

Austin

ATTEN Toby Walters

CLIENT CANNON AFB SAMPLES 2

COMPANY Cannon AFB

FACILITY

PREPARED Radian Analytical Services

BY B501 MoPac Blvd

P.O. Box 9748

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Note: septum for split 06 in place upside down

Duplicate of report of 04/30/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

SAMPLE IDENTIFICATION

01	well A
02	well A field blank
03	well B
04	well B field blank
05	well C
06	well C field blank
07	well D
08	well D field blank
09	trip blank

Analytical Serv TEST CODES and NAMES used on this report

GC 502 EPA Method 502/GC

CORPORATION

PAGE 2
RECEIVED: 04/24/85

Analytical Serv

REPORT

LAB # 85-04-169

Results by Sample

SAMPLE ID well A

FRACTION 01A TEST CODE GC 602 NAME EPA Method 502/GC
Date & Time Collected 04/22/85 Category

DATA FILE _____ DATE INJECTED 04/25/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND ;	---	1,4-Dichlorobenzene	ND
---	Toluene	ND ;	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND ;	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND ;			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in _____ unless otherwise specified

ND = not detected at EPA detection limit meth 502 (Federal Register, 12/3/79)

CORPORATION

PAGE 3

RECEIVED: 04/24/85

Analytical Serv

Results by Sample

REPORT

LAB # 85-04-169

SAMPLE ID well A field blank

FRACTION 02A TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected 04/22/85

Category

DATA FILE _____ D _____ DATE INJECTED 04/25/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,4-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,3-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,2-Dichlorobenzene	ND

Chlorobenzene

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in this report are based on the following methods specified:

ND = not detected at EPA detection limit method 602 (Federal Register, 12/3/79)

CONFIRMATION

PAGE 4
RECEIVED: 04/24/85

Analytical Serv

REPORT

LAB # 85-04-169

Results by Sample

SAMPLE ID well B

FRACTION 03A TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 04/22/85 Category

DATA FILE _____ DATE INJECTED 04/25/85 ANALYST _____ RAA _____ VERIFIED BY JSC
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,4-Dichlorobenzene	ND
---	Toluene	ND	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported on this report are unless otherwise specified

ND = not detected at EPA detection limit meth 402 (Federal Register, 12/3/79)

CORPORATION

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RECEIVED: 04/24/85

Analytical Serv

REPORT

Results by Sample

LAB # 85-04-169

SAMPLE ID well B field blank

FRACTION 04A

TEST CODE GC 602

NAME EPA Method 602/GC

Date & Time Collected 04/22/85

Category

DATA FILE _____ D _____ DATE INJECTED 04/25/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,4-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,3-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,2-Dichlorobenzene	ND
_____	Chlorobenzene	ND			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram
All results reported in _____ unless otherwise specified
ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79)

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 85-04-169

SAMPLE ID well C

FRACTION 05A

TEST CODE GC 602

NAME EPA Method 602/GC

Date & Time Collected 04/22/85

Category

DATA FILE _____
CONC. FACTOR _____

DATE INJECTED 04/26/85

ANALYST _____
INSTRUMENT _____

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,4-Dichlorobenzene	ND
---	Toluene	ND	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number at retention time on chromatogram

ALL results reported in _____ unless otherwise specified

ND = not detected at EPA detection limit with 602 (Federal Register, 12/3/79)

CORPORATION

PAGE / Analytical Serv REPORT LAB # 85-04-169
 RECEIVED: 04/24/85 Results by Sample
 SAMPLE ID well C field blank FRACTION 06A TEST CODE GC 602 NAME EPA Method 602/GC
 Date & Time Collected 04/22/85 Category

DATA FILE D DATE INJECTED 04/24/85 ANALYST MCL VERIFIED BY JSG
 CONC. FACTOR INSTRUMENT d COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND		1,4-Dichlorobenzene	ND
1	Toluene	1.3		1,3-Dichlorobenzene	ND
2	Ethyl Benzene	1.3		1,2-Dichlorobenzene	ND
	Chlorobenzene	ND			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.
 All results reported in ug/L unless otherwise specified.
 ND = not detected at EPA detection limit method 602 (Federal Register, 12/3/79)

CORPORATION

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RECEIVED: 04/24/85

Analytical Serv
Results by Sample

LAB # 85-04-169

SAMPLE ID well D

FRACTION 07A TEST CODE GC 602 NAME EPA Method 602/GC
Date & Time Collected 04/22/85 Category

DATA FILE _____ D DATE INJECTED 04/26/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC FACTOR _____ INSTRUMENT _____ d COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,4-Dichlorobenzene	ND
---	Toluene	ND	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN - scan number or retention time on chromatogram

ALL results reported in _____ unless otherwise specified

ND - not detected at EPA detection limit with 602 (Federal Register, 12/3/79)

CORPORATION

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RECEIVED: 04/24/85

Analytical Serv

REPORT

Results by Sample

LAB # 85-04-169

SAMPLE ID well D field blank

FRACTION 08A

TEST CODE CC 602

NAME EPA Method 602/GC

Date & Time Collected 04/22/85

Category

DATA FILE _____ D _____ DATE INJECTED 04/26/85 ANALYST _____ RAA _____ VERIFIED BY JSG
 CONC. FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,4-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,3-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,2-Dichlorobenzene	ND
_____	Chlorobenzene	ND			

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number or retention time on chromatogram

All results reported in this report unless otherwise specified

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79)

CORPORATION

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Analytical Serv
Results by Sample

REPORT

LAB # 85-04-169

SAMPLE ID trip blank

FRACTION 09A

TEST CODE GC 602 NAME EPA Method 602/GC

Date & Time Collected not specified

Category

DATA FILE _____ D _____ DATE INJECTED 04/26/85 ANALYST _____ RAA _____ VERIFIED BY JSG
CONC. FACTOR _____ INSTRUMENT _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,4-Dichlorobenzene	ND
---	Toluene	ND	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND			

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram

All results reported in this report unless otherwise specified

ND = not detected or EPA detection limit meth 602, (Federal Register, 12/3/79)

CORPORATION

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RECEIVED: 04/24/85

Analytical Serv REPORT
NonReported Work

LAB # 85-04-169

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01B : DUP602
05B : DUP502
07B : DUP502
09B : DUP602

PAGE 1

RECEIVED 05/21/85

Analytical Serv

REPORT

03/07/86 18:09:57

LAB # 85-05-139

REPORT RADIAN

TO BL 4

Austin

ATTEN Toby Walters

CLIENT CANNON AFB

COMPANY Cannon AFB

FACILITY

SAMPLES 3

WORK ID Site 5, 6, 11

TAKEN IKW

TRANS IKW

TYPE

P.O. # 214-114-04-30

INV. # 5828

PREPARED Radian Analytical Services

BY 8501 Hopac Blvd

P.O. Box 2748

Austin, Texas 78765

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Detection limits for 8010 and 8020 were 1.0 and 100 ug/kg respectively

Duplicate of report of 06/04/85

Footnotes and Comments

* Indicates a value less than 5 times the detection limit potential error for such low values ranges between 50 and 100%

* Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an intereferent present

SAMPLE IDENTIFICATION

01 SB 1

02 SB 2

03 SB 3

Analytical Serv TEST CODES and NAMES used on this report

0002 IR Oil and Grease, Infrared

PB GA Lead, Low Level

PB P D Spectral Digestion Method

PB P A Spectral Digestion Method

PB 010 8010/8020 H4194 Vol. 50046

PB 010 8010 from Vol. 50046

CORPORATION

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RECEIVED: 05/21/85

Analytical Serv
RESULTS BY TEST

LAB # 85-05-139

TEST CODE default units	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)
ONG IR mg/L	520 ug/g	140 ug/g	310 ug/g
PB GA ug/ml	3.8 ug/g	23 ug/g	1.8 ug/g
PREP W date complete	05/23/85	05/23/85	05/23/85
PREP X date complete	05/28/85	05/28/85	05/28/85

CORPORATION

PAGE 3
RECEIVED: 05/21/85

Analytical Serv

REPORT

LAB # 85-05-139

Results by Sample

SAMPLE ID 68-1 FRACTION Q1A TEST CODE SUB010 NAME GC-HECD H3100 Vol. - SW846
Date & Time Collected 11/20/84 Category

DATA FILE	A	DATE INJECTED 05/22/85	ANALYST	RAA	VERIFIED BY JSG
CUNC. FACTOR			INSTRUMENT	a	COMPOUNDS DETECTED 0
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethene	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon tetrachloride	ND	---		
---	Bromochloromethane	ND	---		
---	1,2-Dichloropropene	ND	---		
---	trans-1,3-Dichloropropene	ND	---		

CORPORATION

PAGE 4

RECEIVED: 05/21/85

SAMPLE ID 6B-1

Analytical Serv

Results by Sample

LAB # 85-05-139

Continued From Above

FRACTION Q1A TEST CODE SN8010 NAME GC-HECD Hsloq. Vol. - SN846
Date & Time Collected 11/20/84 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

LABORATORY CORPORATION

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RECEIVED: 05/21/85

Analytical Serv

REPORT

Results by Sample

LAB # 85-05-139

SAMPLE ID 68-1

FRACTION 01A

TEST CODE SW2020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 11/20/84

Category

DATA FILE
CONC. FACTOR

D

DATE INJECTED 05/23/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN is scan number or retention time on chromatogram

All results reported in µg/g unless otherwise specified

ND = not detected at detection limit of 1 µg unless otherwise specified.

CORPORATION

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RECEIVED: 05/21/85

Analytical Serv
Results by Sample

LAB # 85-05-139

SAMPLE ID 6B-2 FRACTION 02A TEST CODE SW8010 NAME GC-HECD Hg100 Vol. - SW846
Date & Time Collected 11/20/84 Category

DATA FILE A DATE INJECTED 05/23/85 ANAL YET RAA VERIFIED BY JSC
CONC. FACTOR INSTRUMENT 3 COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	NE
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropene	ND			
	trans-1,3-Dichloropropene	ND			

CORPORATION

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RECEIVED: 05/21/85

Analytical Serv

REPORT

LAB # 85-05-139

Results by Sample

Continued From Above

SAMPLE ID 6B-2

FRACTION 02A

TEST CODE SWB010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 11/20/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

CORPORATION

PAGE 8
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Analytical Serv

REPORT

LAB # 85-05-139

Results by Sample

SAMPLE ID 6B-2

FRACTION Q2A TEST CODE SW8020

NAME GC-PID Atom Vol. - SW846

Date & Time Collected 11/20/84

Category

DATA FILE _____ DATE INJECTED 05/23/85 ANALYST _____ VERIFIED BY JSG
CONC FACTOR _____ INSTRUMENT _____ RAA _____ COMPOUNDS DETECTED _____

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,3-Dichlorobenzene	ND
---	Toluene	ND	---	1,2-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,4-Dichlorobenzene	ND

NOTES AND DIFFERENCES FOR THIS REPORT
SCAN - scan number, retention time on chromatogram.
All results reported in this report are unless otherwise specified
ND - not detected at detection limit of 1 ug/g unless otherwise specified

CORPORATION

PAGE 9

RECEIVED: 05/21/85

Analytical Serv

REPORT

Results by Sample

LAB # 85-05-139

SAMPLE ID 6B-3

FRACTION 03A

TEST CODE SW8010 NAME GC-HECD Hslog Vol. - SW846

Date & Time Collected 11/20/84

Category

DATA FILE
CONC. FACTOR

A

DATE INJECTED 05/23/85

ANALYST
INSTRUMENT

RAA

VERIFIED BY JSG
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Chloromethane	ND	---	Trichloroethane	ND
---	Bromomethane	ND	---	Dibromochloromethane	ND
---	Vinyl Chloride	ND	---	1,1,2-Trichloroethane	ND
---	Chloroethane	ND	---	cis-1,3-Dichloropropene	ND
---	Methylene Chloride	ND	---	2-Chloroethylvinyl Ether	ND
---	Trichlorofluoromethane	ND	---	Bromoform	ND
---	1,1-Dichloroethene	ND	---	1,1,2,2-Tetrachloroethane	ND
---	1,1-Dichloroethane	ND	---	Tetrachloroethylene	ND
---	trans-1,2-Dichloroethene	ND	---	Chlorobenzene	ND
---	Chloroform	ND	---	1,3-Dichlorobenzene	ND
---	1,2-Dichloroethane	ND	---	1,2-Dichlorobenzene	ND
---	1,1,1-Trichloroethane	ND	---	1,4-Dichlorobenzene	ND
---	Carbon tetrachloride	ND			
---	Bromodichloromethane	ND			
---	1,1-Dichloropropene	ND			
---	trans-1,2-Dichloropropene	ND			

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Analytical Serv

REPORT

LAB # 85-05-139

Results by Sample

Continued From Above

SAMPLE ID 6B-3

FRACTION 03A TEST CODE SW8010

NAME GC-HECD H₂log Vol. - SW846

Date & Time Collected 11/20/84

Category

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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RECEIVED: 05/21/85

Analytical Serv

REPORT

LAB # 85-05-139

Results by Sample

SAMPLE ID 68-3

FRACTION 03A

TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 11/20/84

Category

DATA FILE _____ ID _____ DATE INJECTED 05/23/85 ANALYST _____ RAA _____ VERIFIED BY JES
CONC FACTOR _____ INSTRUMENT _____ d _____ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND	_____	1,4-Dichlorobenzene	ND

NOTES AND RECOMMENDATIONS FOR THIS REPORT

SCAN # 50 is number of retention time on chromatogram

All results reported in this report are based on other data specified

ND = not detected or below detection limit of 1 ug/l unless otherwise specified.

PAGE 1
RECEIVED: 05/24/86

Analytical Serv

REPORT

LAB # 85-05-176

03/07/86 18:11:16

REPORT Radiom
TO BL 4
Austin

PREPARED Radian Analytical Services
BY 8501 MoPac Blvd
P O Box 9948
Austin, Texas 78765

ATTEN Toby Walters

CERTIFIED BY

ATTN
PHONE (512) 454-4797

CONTACT CONOVER

CLIENT CANNON AFB
COMPANY Cannon AFB
FACILITY
SAMPLES 3

WORK ID 1D soil, inorganics
TAKEN TKW
TRANS
TYPE
P.O. # 214-114-04-30
INV. # 5833

Duplicate of report of 02/13/86.

Footnotes and Comments

* Indicates a value less than 5 times the detection limit.
Potential error for such low values ranges between
50 and 100%.

* Indicates that spike recovery for this analysis on the
specific matrix was not within acceptable limits indicating
an interferent present.

SAMPLE IDENTIFICATION

01 1D-1
02 1D-2
03 1D-3

Analytical Serv TEST CODES and NAMES used on this report

AG E Silver, ICPEs
AS GA Arsenic, low level
BA E Barium, ICPEs
CB E Cadmium, ICPEs
CR F Chromium, ICPEs
CU L Copper, ICPEs
FE E Iron, ICPEs
HG GA Mercury, Cold Vapor
HI E Hydrogen, ICPEs
HI E Nickel, ICPEs
DMS IR Oil and Grease, Infrared
PV GA Lead, low level
EOP W Spectral Digestion Method
PEP V Spectral Digestion Method
TA GA Selenium, low level
ZB E Zinc, ICPEs

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RECEIVED: 05/24/85

ANALYTICAL COPY

REPORT

LAB # 85-05-176

RESULTS BY TEST

TEST CODE	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)
AG E ug/ml	2.4*	1.5*	<.02
AS CA ug/ml	3.5	8.2	1.2
BA E ug/ml	160	110	1.2
CD E ug/ml	0.27*	0.37*	<.2
CR E ug/ml	4.0	5.0	1.1*
CU E ug/ml	2.9	3.5	0.50
FE E ug/ml	1410	3810	220
HG CA ug/ml	0.18	0.27	0.17
MN E ug/ml	36	43	10
NI E ug/ml	4.1	3.9	1.4*
ONG IR ug/l	0.20	0.50	350
PB CA ug/ml	2.2	5.4	1.1
PREP W date complete	05/27/85	05/27/85	05/27/85
PREP X date complete	05/27/85	05/27/85	05/27/85

PAGE 3
RECEIVED 05/24/85

Analytical Serv REPORT
RESULTS BY TEST

LAB # 85-05-176
CONTINUED FROM ABOVE

SE GA			
ug/ml	< 2	ug/g	< 2
ZN E	9.2	ug/g	5.4
ug/ml			ug/g

APPENDIX B

Definitions, Nomenclature, and Units

APPENDIX B

Definitions, Nomenclatures, and Units

- o AA - atomic absorption
- o AFB - Air Force Base
- o AFESC - Air Force Engineering and Services Center
- o AGE - Aerospace Ground Equipment
- o Alluvium - stream deposited sediment, predominantly clay, silt, sand and gravel.
- o Aquifer - geologic unit capable of storing and transmitting significant quantities of water.
- o Artesian - term applied to ground water confined under hydrostatic pressure.
- o AVGAS - aviation gasoline
- o C - field conductivity (specific conductance)
- o °C - degrees centigrade (Celsius)
- o Caliche - calcareous material of secondary origin commonly occurring as near surface layers in arid to semi-arid climates.
- o Caprock - a resistant rock layer consisting of caliche in the High Plains region.
- o CE - Civil Engineering
- o CERCLA - Comprehensive Environmental Response, Compensation and Liability Act (Superfund)
- o CFS - cubic feet per second
- o Confined Aquifer - an aquifer containing ground water under sufficient pressure to rise above the level at which it is encountered by a well.
- o DEQPPM - Defense Environmental Quality Program Policy Memorandum
- o DOD - Department of Defense
- o DPDO - Defense Property Disposal Office

- o EPA - U.S. Environmental Protection Agency
- o EPA Method 413.2 - IR method for determining oil and grease concentrations.
- o EPA Method 415.1 - IR method for determining total organic carbon.
- o EPA Methods 601 and 602 - GC methods for determining chlorinated hydrocarbons (601) and aromatic hydrocarbons (602) in water samples.
- o EPA Toxicity - EPA Method 7310 determination of hazardousness by the criterion of toxicity.
- o Extraction - method for mobilizing contaminant species from a solid matrix prior to analysis.
- o °F - degrees Fahrenheit
- o GC - gas chromatography
- o GPM - gallons per minute
- o HARM - Hazard Assessment Rating Methodology
- o Hazardous Waste - waste determined to be hazardous by virtue of toxicity, reactivity, ignitability, or corrosivity criteria.
- o High Plains - a relatively undissected section of the Great Plains, extending along the eastern side of the Rocky Mountains at elevations above 600 meters.
- o H_2SO_4 - sulfuric acid
- o IR - infrared
- o IRP - Installation Restoration Program
- o JP-4 - jet fuel used by Air Force
- o mg/L - milligrams per liter
- o ug/g - micrograms per gram
- o ug/L - micrograms per liter
- o umhos - micromhos (a measure of specific conductance)
- o MGD - million gallons per day

RADIAN

CORPORATION

- o MOGAS - motor gasoline
- o MSL - mean sea level
- o OEHL - Occupational and Environmental Health Laboratory
- o Ogallala Formation - also known as the High Plains Aquifer; Pliocene formation consisting of clay, silt, sand, gravel and caliche.
- o O&G - oil and grease
- o PCB - polychlorinated biphenols
- o Playa - a shallow intermittent lake in an arid to semi-arid region.
- o POL - petroleum, oil and lubricants
- o ppb - parts per billion (ug/L)
- o ppm - parts per million (mg/L or ug/g)
- o PVC - polyvinyl chloride
- o QA/QC - Quality Assurance/Quality Control
- o RAS - Radian Analytical Services.
- o RCRA - Resource Conservation and Recovery Act.
- o Red beds - the Permian and Triassic sedimentary rocks of the Western U.S., typically exhibiting a red color.
- o SCS - Soil Conservation Service
- o Spike - the known amount of a compound added to a sample to determine the accuracy of analysis.
- o Standard Methods 509A and 509B - GC methods for identifying pesticides.
- o SW 8010 and 8020 - GC methods for determining chlorinated hydrocarbons (8010) and aromatic hydrocarbons (8020) in soils.
- o TAC - Tactical Air Command
- o TDS - total dissolved solids
- o TFW - Tactical Fighter Wing

- o TOC - total organic carbon
- o USAF - United States Air Force
- o USDA - United States Department of Agriculture
- o USGS - United States Geological Survey
- o Water Table - the elevation of the ground-water surface in an unconfined aquifer.

APPENDIX C
Scope of Work

ORDER FOR SUPPLIES OR SERVICES						PAGE 1 OF	
2. PROC INSTRUMENT NO. (PIN)		3. CALL ORDER NO.		4. DATE OF ORDER		5. REQUISITION PURCHASE REQUEST PROJECT NO.	
F33615-84-D-4402		0004		84SEP25		FY7624-84-01836	
Mark all packages & papers with this number.						6. CERTIFIED FOR NATIONAL DEFENSE UNDER DO-C9	
7. ISSUED BY CODE FQ8419						8. ADMINISTERED BY CODE S4404A	
DEPARTMENT OF THE AIR FORCE AIR FORCE SYSTEMS COMMAND AERONAUTICAL SYSTEMS DIV/PMRSC WRIGHT-PATTERSON AFB, OH 45433 BUYER: DIANE C. CARSELLO PHONE: (513) 255-5633				DCASMA SAN ANTONIO 615 EAST HOUSTON ST. P. O. BOX 1040 SAN ANTONIO, TX 78294			
9. CONTRACTOR NAME AND ADDRESS		CODE 3B126		FACILITY CODE		10. MAIL INVOICES TO	
RADIANT CORPORATION 8501 MO-PAC BLVD. P. O. BOX 9948 AUSTIN, TEXAS 78766 (TRAVIS COUNTY) PHONE: (512) 454-4797				IF "9" FOR MULTIPLE FACILITIES SELECT "K"		11. DISCOUNT FOR PROMPT PAYMENT	
						NET D A Y S 1 ST N DAYS 2 ND " DAYS 3 RD " DAYS	
12A. PURCHASE OFFICE POINT OF CONTACT		12B. PAYMENT WILL BE MADE BY		CODE S4403A		IF "9" SEE SECT "K"	
LOB/L58/LOB		DCASR DALLAS 500 SOUTH ERVAY ST. DALLAS, TX 78201					
13. RESERVED FOR SERVICE/AGENCY USE							
14. TYPE CONTRACTOR		15. SECURITY A. CLASS		B. DATE OF DD 254			
A		U					
16. CONTRACT ADMINISTRATION DATA				17. RESERVED		18. SVC AGENCY USE	
A. FAST PAY (1) KIND (2) TYPE 0 Y				C. ABSTRACT RECIP ADP POINT		D. SPL CONT PROVISIONS E. COMT ADMIN FUNC LMT	
19. SUPPLY CRIT				20. TOTAL AMOUNT		NOT TO EXCEED	
C S				365,803.27			
21. APPROPRIATION AND ACCOUNTING DATA		D. LIMIT SUBHEAD		E. SUPPLEMENTAL ACCOUNTING CLASSIFICATION			
U AA 9740810.200				E74 4308 P820 503701*			
F. CPN RECIPIENT 000A0		G. OBLIGATION AMOUNT		H. NON-CLINELIN PAYMENT		I. SVC AGENCY USE	
		365,803.27		PROV		FY7624-84-01836*	
22A. DELIVERY		B. NON-ODD CONTRACT NO.					
X		This delivery order is subject to instructions contained on this side of form only and is issued in accordance with and subject to terms and conditions of above numbered contract, or Non-ODD Contract No.					
22B. PURCHASE		Reference your CONTRACT CATEGORY CODE: FAZ					
15 CHECKED, AND NO 15 IF THIS SIDE IS CHECKED, special provisions and delivery as indicated. This purchase is negotiated under authority of 19 USC 2304(a)(6) or as specified in the schedule, if within the U.S., its possessions or Puerto Rico; if otherwise, under 2304(a)(6).							
If checked, Additional General Provisions apply, supplier shall sign Acceptance on DD Form 1155 and return.							
*If quantity accepted by the Government is same as quantity ordered, indicated by V mark. If different enter actual quantity accepted below quantity ordered and encircle.		23. UNITED STATES OF AMERICA		84 Sep 19 (YYMMDD)		24. TOTAL	
		CHRISTOPHER D. MILLER				28. DIFFERENCES	
		BY: NAME OF CONTRACTING/ORDERING OFFICER AND DATE				29. INITIALS	
25. QUANTITY ORDERED HAS BEEN		26. SHIP NO.		27. D.O. VOUCHER NO.		32. Amount Verified Correct For	
<input type="checkbox"/> INSPECTED <input type="checkbox"/> RECEIVED <input type="checkbox"/> ACCEPTED, AND CONFORMS TO THE CONTRACT EXCEPT AS STATED		<input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL		31. PAID BY		33. CHECK NUMBER	
DATE SIGNATURE OF AUTHORIZED GOVERNMENT REPRESENTATIVE		30. PAYMENT				34. BILL OF LADING NO.	
35. I CERTIFY THIS AMOUNT IS CORRECT AND PROPER FOR PAYMENT		<input type="checkbox"/> COMPLETE <input type="checkbox"/> PARTIAL <input type="checkbox"/> FINAL					
SIGNATURE AND TITLE OF CERTIFYING OFFICER		39. TOTAL CONTAINERS		40. S/R ACCOUNT NUMBER		41. S/R VOUCHER NO.	
J. RECEIVED AT		37. RECEIVED BY		38. DATE RECEIVED			

AFSC FORM 700

NOV 75

*1947 HSG/FMCF, Pentagon, AF Form 402 #E7-OA83-03, 20 JUL 84

PART I SECTION B OF THE SCHEDULE SUPPLIES LINE ITEM DATA			1. PROC INSTRUMENT ID NO. (PIIN)	2. SPIIN	3. PAGE 2 OF
4. ITEM NO.	5. QUANTITY*	6. PURCH UNIT	7. UNIT PRICE	8. TOTAL ITEM AMOUNT*	
0001	1	LO	\$	\$ E129,588.82	
9. SCTY/NO. ACRN CLAS	11. NSN	12. FSCM AND PART NUMBER		13. CIRR	
U AA N					
14. SITE CODES A. POA B. ACP C. FOB	15. NOUN	16. SVC/AGENCY USE			
D D D	SAMPLING, ANALYSIS AND DATA				
17. PR/MIPR DATA	18. AUTHORIZED RATE A. PROGRESS PAY B. RECOUP	19. CONTRACT PERCENT FEE	20. SVC ID NO.	21. ITEM/PROJ MGR	
FY7624-84-01836-0001				FY7624	
22. 1ST DISCOUNT A. B. DAYS	23. 2ND DISCOUNT A. B. DAYS	24. 3RD DISCOUNT A. B. DAYS	25. NET DAYS	26. QUANTITY VARIANCE A. OVER B. UNDER	27. TYPE CONTRACT 28. OPR
%	%	%	%	%	%
29. DESCRIPTIVE DATA					
CONDUCT SAMPLING AND ANALYSIS IN ACCORDANCE WITH SECTION C, DESCRIPTION/ SPECIFICATION IN THE BASIC CONTRACT AND THE TASK DESCRIPTION INCLUDED HEREIN, AND SUBMIT DATA IN ACCORDANCE WITH ATTACHMENT #1, CONTRACT DATA REQUIREMENTS LIST OF THE BASIC CONTRACT AS IMPLEMENTED ON PAGE 12 BY PARAGRAPH VI HEREOF					
IN NO EVENT SHALL THE TOTAL AMOUNT PAID FOR THIS ITEM EXCEED THE AMOUNT SPECIFIED IN BLOCK 8 ABOVE.					

PART I SECTION B OF THE SCHEDULE SUPPLIES LINE ITEM DATA			1. PROC INSTRUMENT ID NO. (PIIN)	2. SPIIN	3. PAGE 2 OF
4. ITEM NO.	5. QUANTITY*	6. PURCH UNIT	7. UNIT PRICE	8. TOTAL ITEM AMOUNT*	
0002	1	LO	\$	\$ E235,370.85	
9. SCTY/NO. ACRN CLAS	11. NSN	12. FSCM AND PART NUMBER		13. CIRR	
U AA N					
14. SITE CODES A. POA B. ACP C. FOB	15. NOUN	16. SVC/AGENCY USE			
D D D	SUPPORT				
17. PR/MIPR DATA	18. AUTHORIZED RATE A. PROGRESS PAY B. RECOUP	19. CONTRACT PERCENT FEE	20. SVC ID NO.	21. ITEM/PROJ MGR	
FY7624-84-01836-0002				FY7624	
22. 1ST DISCOUNT A. B. DAYS	23. 2ND DISCOUNT A. B. DAYS	24. 3RD DISCOUNT A. B. DAYS	25. NET DAYS	26. QUANTITY VARIANCE A. OVER B. UNDER	27. TYPE CONTRACT 28. OPR
%	%	%	%	%	%
29. DESCRIPTIVE DATA					
SUPPORT CONSISTING OF MATERIALS, TRAVEL, COMMUNICATION, SUBCONTRACTING SITE PREPARATION.					
IN NO EVENT SHALL THE TOTAL AMOUNT PAID FOR THIS ITEM EXCEED THE AMOUNT IN BLOCK 8 ABOVE.					

*REPRESENTS NET AMOUNT OF INCREASE/DECREASE WHEN MODIFYING EXISTING ITEM NO.

N = NOT APPLICABLE
U = UNDEFINITEZED
NSP = NOT SEPARATELY PRICED

E = ESTIMATED
- (IN QTY AND \$) = DECREASE
+ OR - (IN ITEM NO.) = ADDITION OR DELETION
CIRR: CONTROLLED ITEM RPT RQMT

SITE
CODES:

S = SOURCE
D = DESTINATION
O = INTERMEDIATE

PART I SECTION F OF THE SCHEDULE SUPPLIES SCHEDULE DATA				1. PROC INSTRUMENT ID NO. (PIIN) F33615-84-D-4402	2. SPIIN 000401	3. PAGE 19 of 19
4. ITEM NO.	5. ACRN	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. COM ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLIN IDENT EXHIBIT
1001	AA					
11. DEL SCHED DATE A. 86MAY30	12. ENDING DATE (WHEN APPL) A.	13. DEL SCHEDULE QTY* A. 1	14. SCTY U	15. SHIP TO FY7624	16. MARK FOR	
B.	B.	B.	D.	D.	D.	
C.	C.	C.	E.	E.	E.	
17. DESCRIPTIVE DATA SEE SECTION H 4 AND 5 OF THE BASIC CONTRACT FOR FY7624 ADDRESS. TECHNICAL EFFORT TO BE COMPLETED NO LATER THAN 85MAR18. DATA TO BE DELIVERED IN ACCORDANCE WITH ATTACHMENT #1, DD FORM 1423, AS IMPLEMENTED BY PARAGRAPH VI, PAGE 12 HEREOF, NO LATER THAN 85OCT01.						
0002	AA					
11. DEL SCHED DATE A. 86MAY30	12. ENDING DATE (WHEN APPL) A.	13. DEL SCHEDULE QTY* A. 1	14. SCTY U	15. SHIP TO FY7624	16. MARK FOR	
B.	B.	B.	D.	D.	D.	
C.	C.	C.	E.	E.	E.	
17. DESCRIPTIVE DATA SEE SECTION H 4 AND 5 OF THE BASIC CONTRACT FOR FY7624 ADDRESS.						
11. DEL SCHED DATE	12. ENDING DATE (WHEN APPL)	13. DEL SCHEDULE QTY*	14. SCTY CLAS	15. SHIP TO	16. MARK FOR	
A.	A.	A.				
B.	B.	B.	D.	D.	D.	
C.	C.	C.	E.	E.	E.	
17. DESCRIPTIVE DATA						

RESENTS A NET INCREASE/DECREASE WHEN NO + OR - APPEARS AFTER THE ITEM NO.

E = ESTIMATED

- (IN QTY) = DECREASE

+ OR - (IN ITEM NO.) = ADDITION OR DELETION

C-5

18 JUL 1984

INSTALLATION RESTORATION PROGRAM
PHASE II, STAGE 1, TASK DESCRIPTION
CANNON AFB NM

I. DESCRIPTION OF TASK:

The purpose of this task is to determine if environmental contamination has resulted from waste disposal practices, fuel spills/leaks and fire training activities at Cannon AFB; to provide estimates of the magnitude and extent of contamination, should contamination be found; to identify potential environmental consequences of migrating pollutants; and to determine any additional investigations necessary to identify the magnitude, extent and direction of movement of discovered contaminants.

The Phase I IRP report (mailed under separate cover) gives background information and describes the sites for this task. To accomplish the survey effort, take the following action:

A. General

1. Well Installation

a. Comply with the U.S. EPA Publication 33019-S1-002, NEIC Manual for Ground Water/Subsurface Investigations at Hazardous Waste Sites for monitoring well installation.

b. Install 4 groundwater monitoring wells the depth of each not to exceed 300 linear feet; the total maximum well depth is 1200 linear feet. Accomplish monitor well drilling using air rotary methods with an 8-inch bit. Collect, containerize, describe and log representative geologic samples at 5-foot intervals during drilling operations. Also compile formation logs.

c. Construct wells of slotted 4-inch I.D., Schedule 80, screw joint PVC casing. Only screw type joints shall be used; glued fittings are not permitted. Tremie a gravel pack consisting of clean, washed pea gravel into place around the annulus between the screen and the boring from the bottom of the hole to approximately five feet above the screen. Then place one foot of clean, washed, fine grained sand above the gravel pack. Position three feet of bentonite pellets above the sand. Wet the bentonite to insure a seal is formed. Grout the remainder of the hole in stages.

d. Screen each well 15 feet below the water table surface using 4-inch I.D., Schedule 80 PVC with 0.010-inch mill slots. Cap the bottom of the screen. Flush thread all connections.

e. Base officials determine which method is used to complete the well surface. (1) If well stick-up is of concern in an area, complete the well flush with the land surface. In the case of a flush completion, cut the PVC casing two to three inches below land surface, and cement a protective locking lid in place. The protective lid will consist of a cast-iron valve box assembly cemented in place with concrete. Insure that free drainage is maintained within the valve box. Also, provide a PVC casing cap to prevent infiltration of surface water. (2) If an above ground surface completion is

PART I SECTION B OF THE SCHEDULE SUPPLIES LINE ITEM DATA				1. PROC INSTRUMENT ID NO. (PIIN) F33615-84-D-4402		2. SPIIN 0004		3. PAGE 3 OF	
4. ITEM NO. 0004	5. QUANTITY 1	6. PURCH UNIT LO	7. UNIT PRICE \$	8. TOTAL ITEM AMOUNT \$ E848.60		13. CIRP			
10. ACRN U AA N		11. NSN		12. FSCM AND PART NUMBER		16. SVC/AGENCY USE			
14. SITE CODES A. PQA B. ACP C. FOB D D D		15. NOUN CHEMICAL ANALYSIS AND DATA		18. AUTHORIZED RATE A. PROGRESS PAY B. RECOUP		19. CONTRACT PERCENT FEE		20. SVC ID NO.	
17. PR/MIPR DATA FY7624-84-01836-0004		21. ITEM/PROJ MGR FY7624		22. 1ST DISCOUNT A. B. DAYS		23. 2ND DISCOUNT A. B. DAYS		24. 3RD DISCOUNT A. B. DAYS	
25. NET A. DAYS		26. QUANTITY VARIANCE A. OVER B. UNDER		27. TYPE CONTRACT		28. OPR		29. DESCRIPTIVE DATA	
<p>CONDUCT ANALYSIS IN ACCORDANCE WITH SECTION C, DESCRIPTION/SPECIFICATIONS AND THE TASK DESCRIPTION INCLUDED HEREIN AND PROVIDE DATA IN ACCORDANCE WITH ATTACHMENT #3 OF THE BASIC CONTRACT AS IMPLEMENTED ON PAGE 12, PARAGRAPH VI, HEREOF.</p> <p>IN NO EVENT SHALL THE TOTAL AMOUNT PAID FOR THIS ITEM EXCEED THE AMOUNT SPECIFIED IN BLOCK 8 ABOVE.</p>									

REPRESENTS NET AMOUNT OF INCREASE/DECREASE WHEN MODIFYING EXISTING ITEM NO.

N = NOT APPLICABLE
U = UNDEFINIZED
NSP = NOT SEPARATELY PRICED

E = ESTIMATED
- (IN QTY AND \$) = DECREASE
+ OR - (IN ITEM NO.) = ADDITION OR DELETION
CIRR: CONTROLLED ITEM RPT RQMT

S = SOURCE
D = DESTINATION
O = INTERMEDIATE

SITE CODES:

used, extend the PVC well casing two or three feet above land surface. Provide an end-plug or casing cap for each well. Shield the extended PVC casing with a six-inch diameter steel guard pipe which is placed over the PVC casing and cap and seated in a 16-inch by 16-inch by 4-inch concrete surface pad. Install a lockable cap or lid at the casing top to discourage vandalism. Position three 3-inch diameter steel guard posts, each six feet in total length, radially from each wellhead. Recess the guard posts approximately 2 feet into the ground and insure they are removable to facilitate access for sampling pump installation. Provide a locking mechanism to prevent unauthorized removal.

f. Develop each well as soon as practical after completion by surging and/or bailing. Continue well development until the discharge water is clear and free of sediment to the fullest extent practical. Measure and record well locations on a site map.

g. Provide a dedicated sampling apparatus at each well consisting of an appropriate submersible pump with a pumphead check valve. Set the pump to a depth of 10 feet below static water level, as conditions allow. Proceed with pump installation after the well has been properly developed. Extend the sampling pump discharge line consisting of PVC tubing/pipe through the top of the wellhead. Do not use glues, solvents or thread dressings. Provide electrical service to the pump using PVC-clad wirings with Teflon[®] shrink tubing seals over splices. Suspend pumps with a stainless steel cable. Provide appropriate connections at each wellhead for coupling a sampling discharge line and back-pressure valve. Also provide an electrical connection for attaching a portable field generator and electrical overload protection (i.e., lighting, line surges, and pump overload) for each well pump. Protect all surface connection points from weathering or possible vandalism by enclosing them at the wellhead or by placing them within the protective well casing or valve box.

h. Survey all contractor installed wells for location and elevation (feet above mean sea level) at the top of each well casing. Accuracies of 0.05 feet for elevation and 10 feet for horizontal location are required. Record locations on a site map.

2. Deep Soil Boring

a. Conduct 41 deep soil borings not to exceed a maximum of 2500 linear feet. Accomplish the borings using 7 1/2-inch hollow-stem auger techniques. Extend each deep boring to penetrate the shallow caliche layer, an estimated total depth of 60 feet below ground surface. Obtain split-spoon samples, ASTM Method D-1536, near the top of the caliche, 5 feet into the caliche and just below the caliche layer. Immediately cap a portion of the tubed sample and archive it in frozen storage.

b. During the deep boring operations, develop lithographic descriptions and stratigraphic logs. Place special emphasis on field identification of soil contamination.

3. Shallow Soil Boring

a. Perform six shallow soil borings not to exceed a total depth of 60 linear feet. Use a hand auger equipped with a 4-inch diameter stainless steel bucket.

b. Collect soil samples at 1 foot below ground surface and at the total depth of each augering. Total depth of augering and sampling operations will be approximately 10 feet below ground surface. Total depth may be less at locations where significant obstructions (natural or man-made) are encountered. Place the soil samples collected during augering operations into wide-mouth mason jars with Teflon lined lids. Archive a portion of each sample into frozen storage.

c. Develop lithographic descriptions and stratigraphic logs during shallow soil augering. Place special emphasis on the visual identification of contamination.

4. Tremie grout all boreholes to the surface with a cement/bentonite grout. It is especially important to insure that the caliche layer be adequately resealed to preclude future migration of contaminants through the caliche.

5. Mark each borehole location with a permanent marker (where practical), and record the location on a site specific project map.

6. Remove all well and boring drill cuttings and clean the general area following the completion of each well or borehole. Properly containerize drill cuttings suspected of being hazardous waste (based on discoloration, odor or organic vapor detection instrument) according to base Civil Engineering requirements. Test the suspected hazardous waste for EP Toxicity and Ignitibility; test a maximum of 25 samples for EP Toxicity and Ignitibility. The contractor is not responsible for ultimate disposal of the contaminated drill cuttings. Disposal will be through base personnel.

7. Determine the exact field location of all boreholes and monitor wells during the planning/mobilization phase of the field investigation. Consult with base personnel to minimize disruption of base activities, to properly locate borings with respect to exact locations of spill/leak sites and to avoid utilities. The senior on-site contractor representative in consultation with a government point of contact (see Section V) shall establish boring locations. The contractor shall direct the drilling and sampling and maintain a detailed log of the conditions and materials penetrated during the course of the work.

8. Collect and analyze one water sample from each monitor well. If the well(s) cannot be sampled due to well development, well characteristics, or other reason(s), indicate the reason(s) in the report specified in Item VI below.

9. Collect and analyze soil samples from each borehole.

10. Analyze water and soil samples collected in A.8 and A.9 above for those contaminants summarized in Table 1, Atch 1 and Table 2, Atch 2. Required detection limits for the above analyses are specified in Table 3, Atch 3.

11. When analyzing water samples for nitrates (as N), use EPA Method 353.1 as specified in Table 2, Atch 2. EPA Method 353.1 requires specific instrumentation which is to be procured and solely dedicated to this IRP analyses effort. Upon completion of this sampling effort and at direction of the USAF OEHL/TS, forward the instrument and its associated modules to the USAF OEHL. Procure the following equipment for the nitrate analyses:

Technicon Auto Analyzer II Basic Single Channel System. Part #460-0017-WW, consisting of the following modules:

- 171 - A017 - 03, 1 - Sampler IV
- 133 - A014 - 08, 1 - Proportioning Pump III, single speed
- 011 - A036 - 05, 1 - Recorder, Single pen
- 199 - A001 - 05, 1 - Colorimeter, Single channel
- 161 - A007 - 01, 1 - Voltage Stabilizer
- 615 - 0081 - 01, 1 - Electrical Outlet Strip
- 514 - 8162 - 01, 1 - Adapter
- 116 - D049 - 01, 1 - Nitrate/Nitrite in Water (0.04-2 mg/L)
- 170 - B070 - 28, 1 - Set/2 Interference Filters, 520 nm
- 1 - Accessory Kit, Consisting of an Initial Supply of Tubing and Fittings

SUGGESTED SOURCE: Technicon Industrial Systems
511 Benedict Ave., Tarrytown NY 10591 (914) 631-8000

12. When using EPA Methods 601 and 602, second column confirmation is required when parameters measured exceed those values identified in Table 4, Atch 4. Conduct second column confirmation on a maximum of 50% of the samples collected for these analyses. Total number of samples for EPA Methods 601 and 602 and Standard Methods 509A and 509B in Atch 1 include this confirmation analysis.

13. Analyze all water samples collected on site for pH, temperature and specific conductance. Sampling, maximum holding time and preservation of samples shall strictly comply with the following references: Standard Methods for the Examination of Water and Wastewater, 15th Ed. (1980), pp. 35-42; ASTM, Section II, Water and Environmental Technology; Methods for Chemical Analysis of Waters and Wastes, EPA Manual 600/4-79-020, pp. xiii to xix (1979); and Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA 600/14-82-057.

14. The contractor's specific Quality Assurance/Quality Control (QA/QC) protocols and procedures require split samples for all samples. Analyze one set of samples and forward the other set of samples through overnight delivery to:

USAF OEHL/SA
Bldg 140
Brooks AFB TX 78235

Include the following information with the samples sent to the USAF OEHL/SA:

- a. Purpose of sample (analyte)
- b. Installation name (base)
- c. Sample number (on containers)
- d. Source/location of sample
- e. Contract task number and title of project
- f. Method of collection (bailer, suction pump, air-lift pump, etc.)
- g. Volumes removed before sample taken
- h. Special conditions (use of surrogate standard, special nonstandard preservatives, etc.)
- i. Preservative used

Forward this information with each sample by properly completing an AF Form 2752 (mailed under separate cover). In addition, attach copies of field logs documenting sample collection with the samples. Maintain chain-of-custody records for all samples, field blanks and quality control duplicates.

15. Determine the areal extent of each site by reviewing available aerial photos of the base and by field reconnaissance.

16. Plot and map field data collected for each site. Estimate the nature, magnitude and potential for contaminant flow within the site to receiving streams and groundwaters. Upon completion of the sampling and analysis, tabulate the data in the next R&D Status report as specified in Item VI below.

17. Monitor the air during all well and borehole drilling and measure the generation of toxic/hazardous materials. Include the results of air monitoring in the borehole and well logs.

B. In addition to items specified in A. above, conduct the following specific actions at the sites identified:

1. Site 9, Fire Department Training Area No. 4

a. Make two deep soil borings in the suspected area of contamination according to section A.2. Determine the exact location in the field.

b. Collect soil samples immediately above, 5 feet into and just below the caliche layer (approx. 60 ft) and analyze these samples for parameters listed in Table 1, Atch 1.

2. Site 5, Landfill No. 5

a. Drill and install four groundwater monitoring wells according to section A.1, the maximum depth of each well not to exceed 300 linear feet. Position three wells along the landfill perimeter consistent with the assumed downgradient direction of groundwater flow. Place the fourth monitor well at the landfill perimeter in the assumed upgradient direction of groundwater flow.

b. After well development, collect one water sample from each monitor well and analyze for those parameters shown in Table 1, Atch 1 and Table 2, Atch 2.

3. Site 15, AGE Drainage Ditch - same as B.1. above.

4. Site 6, Fire Department Training Area No. 1 - same as B.1. above.

5. Site 11, Engine Test Cell Overflow Pit and Leaching Field - same as B.1. above.

6. Site 4, Landfill No. 4

a. Make a maximum of seven deep soil borings according to section A.2 inside the landfill perimeter. Position the boreholes so as to adequately determine the existence of contaminants at this site. Determine exact borehole locations in the field.

b. Prior to ground penetration, conduct a metal detection survey of each site. Use a Fisher M-Scope TW-5 Varied Metal Locator or equivalent instrument. Do not install boreholes directly over locations where buried drums have potentially been identified. Should boring returns indicate a waste container has been punctured, cease drilling immediately and tremie grout the borehole to the surface with a cement/bentonite grout. Collect a contaminated soils sample and test the suspected hazardous waste for EP Toxicity and Ignitability in accordance with paragraph A.6. If no instance shall the caliche layer be penetrated within 100 feet of a borehole site where it is suspected a waste container has been punctured.

c. Collect soil samples immediately above, 5 feet into and just below the caliche layer (approx. 60 ft) and analyze these samples for parameters listed in Table 1, Atch 1.

7. Site 1, Landfill No. 1 - same as B.6 above except make a maximum of five deep soil borings.

8. Site 3, Landfill No. 3 - same as B.6 above except make a maximum of nine deep soil borings.

9. Site 2, Landfill No. 2 - same as B.6 above except make a maximum of five deep soil borings.

10. Site 19, MOGAS Spill - same as B.1 above

11. Site 17, Entomology Rinse Area

a. Make three deep soil borings surrounding the site according to section A.2. Determine the exact location in the field.

b. Collect soil samples immediately above, 5 feet into and just below the caliche layer (approx. 60 ft) and analyze these samples for parameters listed in Table 1, Atch 1.

12. Site 7, Fire Department Training Area No. 2 - same as B.1 above, except make only one deep soil boring in the suspected area of contamination.

13. Site 8, Fire Department Training Area No. 3 - same as B.12 above.

14. Site 12, Stormwater Collection Point

a. Make three shallow soil hand borings in the suspected area of contamination according to section A.3. Determine the exact locations in the field.

b. Collect soil samples at 1 foot below ground surface and at the total boring depth (approx. 10 ft). Analyze these samples for parameters listed in Table 1, Atch 1.

15. Site 13, Sewage Lift Station Overflow - same as B.14 above except that only two shallow soil borings are needed in the suspected area of contamination.

16. Site 16, Solvent Disposal Site - same as B.14 above except that only one shallow soil boring is needed in the suspected zone of contamination.

C. Data Review

1. Tabulate sampling and analysis results, incorporate them into the monthly R&D Status Reports and forward to the USAF OEHL for review as soon as they become available as specified in Item VI below.

2. Upon completion of all analyses, tabulate and incorporate all results into an Informal Technical Information Report (Atch 1, Seq 3 and Atch 3, Seq 2 as specified in Item VI below) and forward to USAF OEHL for review.

D. Reporting

1. Prepare a draft report delineating all findings of this field investigation and forward it to the USAF OEHL (as specified in Item VI below) for Air Force review and comment. Include in this report a discussion of regional/site specific hydrogeology, well and boring logs, data from water level surveys, groundwater surface and gradient maps, water quality and soil analysis results, quality control sample data, available geohydrologic cross sections and laboratory quality assurance information. Follow the USAF OEHL supplied report format (mailed under separate cover).

2. In the recommendation section, address each site and list them by categories. Category I consists of sites where no further action, including remedial action, is required. Data for these sites are considered sufficient to rule out unacceptable health or environmental risks. Category II sites are those requiring additional monitoring or work to quantify or further assess the extent of current or future contamination. Category III sites are sites that will require remedial actions (ready for IRP Phase IV actions). In each case, summarize or present the results of field data, environmental or regulatory criteria, or other pertinent information supporting these conclusions.

3. Make estimates of the magnitude, extent and direction of movement of contaminants discovered. Identify potential environmental consequences of discovered contamination, where known.

4. Identify specific requirements, if any, for future groundwater and surface water monitoring.

E. Meetings

Attend one meeting with representatives of the Air Force and regulatory agencies to take place at Cannon AFB for a duration of one day (eight hours). Date and time to be specified by USAF OEHL.

II. SITE LOCATION AND DATES:

Cannon AFB NM
Building and time to be established.

III. BASE SUPPORT: Cannon AFB will provide the following:

A. Prior to any contractor digging or drilling, locate underground utilities and issue digging permits, if applicable.

B. Secure area for contractor equipment, approximately 2500 square feet.

C. Coordination with base fire, health and safety offices.

D. Temporary construction barriers and parking/traffic control support for wells sited in vehicle traffic areas.

E. Transport of contaminated drill cuttings and designation of a disposal site for these cuttings.

F. Transportation of contaminated groundwater and designation of a disposal site for contaminated groundwater generated during well development.

IV. GOVERNMENT FURNISHED PROPERTY: None

V. GOVERNMENT POINTS OF CONTACT:

- | | |
|--|--|
| 1. Maj Edward Barnes
USAF OEHL/TS
Brooks AFB TX 78235
(512) 536-2158
AV 240-2158 | 2. Col Jerry Dougherty
HQ TAC/SGPB
Langley AFB VA 23665
(804) 764-2180
AV 432-5857 |
| 3. Lt Eric Scott
USAF Hosp Cannon/SGPB
Cannon AFB NM 88103
(505) 784-3311
AV 681-3063/3064 | |

VI. In addition to sequence numbers 1*, 5 and 11 listed in Atch 1 to the contract, which are applicable to all orders, the reference numbers below are applicable to this order. Also shown are data applicable to this order.

*Forward a copy of R&D Status Report to all government POCs identified in Section V.

Sequence No.	Block 10	Block 11	Block 12	Block 13	Block 14
Atch 1					
3	O/TIME	**	**		2
4	ONE/R	85MAR18	85JUL01	85OCT01	*
Atch 3					
2	O/TIME	**	**		2

*Two draft reports are required. After incorporating Air Force comments concerning the first draft report, supply the USAF OEHL with one copy of the second draft report. Upon acceptance of the second draft, distribute the remaining 24 copies as specified by the USAF OEHL. Supply 50 copies plus the original camera ready copy of the final report and distribute them as specified by the USAF OEHL.

**Upon completion of analytical effort.

TABLE 1
IRP PHASE II, STAGE 1. SAMPLING PARAMETERS
CANNON AFB NM

SITE	OIL & GREASE	TOX	LEAD	TOC	PESTICIDES	INORGANIC SPECIES	OTHER
9	6S	6S	6S	-	-	-	-
5	-	4W	4W	4W	-	4W ^c	*6V ^a
15	7S ^b	7S ^b	7S ^b	-	-	-	-
6	6S	6S	6S	-	-	-	-
11	7S ^b	7S ^b	7S ^b	-	-	-	-
4	23S ^b	23S ^b	23S ^b	23S ^b	-	23S ^{b,c}	-
1	16S ^b	16S ^b	16S ^b	16S ^b	-	16S ^{b,c}	-
3	28S ^b	28S ^b	28S ^b	28S ^b	-	28S ^{b,c}	-
2	16S ^b	16S ^b	16S ^b	16S ^b	-	16S ^{b,c}	-
19	7S ^b	-	7S ^b	-	-	-	-
17	-	10S ^b	-	10S ^b	*15S ^b	10S ^{b,d}	-
7	3S	3S	3S	-	-	-	-
8	3S	3S	3S	-	-	-	-
12	7S ^b	7S ^b	7S ^b	-	-	7S ^{b,c}	-
13	4S	4S	4S	-	-	4S ^e	-
16	2S	2S	2S	-	-	2S ^e	-
TOTAL ^f	133S	138S, 4W	135S, 4W	93S, 4W	*15S	106S, 4W	*6V

S = Soil sample

W = Water sample

^aSee Table 2

^bIncludes QC samples

^cArsenic, barium, cadmium, chromium (total), copper, iron, nickel, mercury, selenium, silver, zinc

^dArsenic, mercury

^eArsenic, barium, cadmium, copper, chromium (total), mercury, manganese, selenium, silver, zinc

^fTotals do not include a maximum of 25 samples for EP Toxicity and Ignitibility analyses.

^gAldrin, DDT isomer, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, Lindane, Methoxychlor, Diazinon, Malathion, Parathion, Toxaphene, 2,4-D, 2,4,5-T, 2,4,5-TP (silvex).

^hIncludes 50% increase for second-column confirmation.

TABLE 2

LIST OF CHEMICAL ANALYSES FOR SAMPLES OBTAINED FROM
SITE 5, LANDFILL NO. 5, AREA MONITOR WELLS

Purgeable Halocarbons, EPA Method 601

Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chlorobenzene
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Chloromethane
Dibromochloromethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
trans-1,2-Dichloroethene
1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Methylene chloride
1,1,2,2-Tetrachloroethane
Tetrachloroethene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

Purgeable Aromatics, EPA Method 602

Benzene
Chlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Ethylbenzene
Toluene

General Ions

Calcium	EPA Method 200.7
Magnesium	EPA Method 200.7
Sodium	EPA Method 200.7
Potassium	EPA Method 200.7
**Manganese	EPA Method 200.7
**Chloride	EPA Method 325.2
Sulfate	EPA Method 375.3
Phosphate (Total)	EPA Method 365.4
*Nitrate (AS-N)	EPA Method 353.1

General Water Quality

**pH
**Total Dissolved Solids
Conductivity

*Interim Primary Drinking Water
Standard Parameter (40 CFR 141)

**Secondary drinking water regu-
lation parameter (40 CFR 143)

TABLE 3

ANALYTICAL PARAMETERS, METHODS AND REQUIRED DETECTION LIMITS

Detection limits are $\mu\text{g/g}$ for soil unless noted otherwise:

<u>PARAMETER</u>	<u>METHOD</u>	<u>DETECTION LIMIT ($\mu\text{g/g}$)</u>
Oil and Grease (using IR)	EPA 413.2	100
Total Organic Carbons (TOC) ^a	EPA 415.1	1000 (1000 $\mu\text{g/L}$ water)
Total Organic Halogen (TOX) ^a	EPA 9020	5 (5 $\mu\text{g/L}$ water)
Purgeable Halocarbons and Aromatics (VOA)	EPA 601 and 602	b
EP Toxicity	EPA 7310	c
Ignitibility	EPA 1010	d
Total Dissolved Solids	EPA 160.1	1000 $\mu\text{g/L}$ water
Arsenic ^f	EPA 206.2 or 206.3	10 $\mu\text{g/L}$ of solution
Barium ^f	EPA 208.2	200 $\mu\text{g/L}$ of solution
Cadmium ^f	EPA 213.2	0.2 (10 $\mu\text{g/L}$ of solutions)
Copper ^f	EPA 220.1	0.4 (20 $\mu\text{g/L}$ of solution)
Chromium ^f	EPA 218.1	5 (50 $\mu\text{g/L}$ of solution)
Iron total ³	EPA 236.1	100 $\mu\text{g/L}$ of solution
Lead ^f	EPA 239.2	2 (20 $\mu\text{g/L}$ water)
Manganese ⁸	EPA 243.1	50 $\mu\text{g/L}$ of solution
Mercury ^f	EPA 245.1 and 245.5 (soils)	0.1 (1 $\mu\text{g/L}$ water)
Nickel	EPA 249.1	100 $\mu\text{g/L}$ of solution
Selenium ^f	EPA 270.3	10 $\mu\text{g/L}$ of solution
Silver ^f	EPA 272.2	10 $\mu\text{g/L}$ of solution
Specific Conductance	EPA 120.1	1° (water)
Zinc ⁸	EPA 289.1	50 $\mu\text{g/L}$ of

(Table 3 Continued)

<u>PARAMETER</u>	<u>METHOD</u>	<u>DETECTION LIMIT (µg/g)</u>
Aldrin	Standard Method 509A	0.02
DDT isomer	Standard Method 509A	0.02
Dieldrin	Standard Method 509A	0.02
Endrin ^f	Standard Method 509A	0.02
Heptachlor	Standard Method 509A	0.02
Heptachlor epoxide	Standard Method 509A	0.02
Lindane ^f	Standard Method 509A	0.01
Methoxychlor ^f	Standard Method 509A	0.20
Diazinon	Standard Method 509A	0.02
Malathion	Standard Method 509A	0.10
Parathion	Standard Method 509A	0.02
Toxaphene ^f	Standard Method 509A	1.00
2,4-D ^f	Standard Method 509B	0.06
2,4,5-T	Standard Method 509B	0.06
2,4,5-TP (silvex) ^f	Standard Method 509B	0.06

^aDetection levels for TOC and TOX must be 3 times the noise level of the instrument. Laboratory distilled water must show no response. If so, corrections of positive results must be made.

^bDetection limits for Volatile Organic Compounds shall be as specified for the compounds by EPA Methods 601-602. Method: Federal Register, Vol. 44, No. 233, pp 69468-69473. This method should be strictly followed including these items:

Item 1.4 - This method is recommended by EPA for use only by experienced residue analysts or under the close supervision of such qualified persons.

Item 2.2 - This is most important. If interferences are encountered (as in early peaks such as vinyl chloride), the method provides a secondary chromatographic column that will be helpful in resolving the compounds of interest from interferences. This must be done in the case of vinyl chloride and so noted in the analysis report.

Items 3.3, 7.1-7.3 - These sections must be analyzed within the recommended holding times.

Item 3.3 - All samples must be analyzed within the recommended holding times. This must be followed without exception.

If questions are encountered about certain contaminants, you may be asked to show both chromatograms used to rule out possible interferences.

<u>C^oMetal</u>	<u>ug/L of solution</u>
As	10
Ba	200
Cd	10
Cr	50
Pb	20
Hg	1
Se	10
Ag	10

^d Find if sample is ignitable at 140 degrees Fahrenheit or below. If so, it is a hazardous waste.

^e Concentration is in micromhos

^f Primary Drinking Water Standard, 40 CFR 141.11

^g Secondary Drinking Water Standard, 40 CFR 143.3

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TABLE 4

If analytes analyses exceed the detection limits identified below, second column confirmation is required:

<u>EPA Method 601 & 602</u>	<u>Detection Level (ug/L)</u>
Benzene	0.7
Carbon	4.0
Chloroform	10
1,2 Dichloroethane	0.1
Methylene Chloride	4.0
Tetrachloroethylene	4.0
Toluene	10
1,1,1-Trichloroethane	10
Trichloroethylene	1.0
Vinyl Chloride	1.0
Dichlorobenzene isomers	Sum greater than 10
Any other organics	>10

<u>Standard Method 509A and 509B</u>	<u>Detection Level ug/L</u>
Aldrin	10
Lindane	.004
2,4-D	10
2,4,5-T	10
2,4,5-TP (Silver)	10
Dieldrin	10
Heptachlor	0.02
Heptachlor epoxide	0.01
Any other pesticide	>10

"Retention times on both columns must match before reporting positive value. If no match, it will be considered an interference."

Atch 4

F33615-84-D-4402/0004

C-21

PART I SECTION F OF THE SCHEDULE SUPPLIES SCHEDULE DATA				PROC INSTRUMENT ID NO. (PIIN) F33615-84-D-4402		2. IIN 0004		3. PAGE 19 OF 1	
4. ITEM NO. 0001	5. ACRN AA	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. COM ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLINICENT EXHIBIT			
DEL SCHED DATE A. 86MAY30	12. ENDING DATE (WHEN APPL) A.	13. DEL SCHEDULE QTY* A. 1	14. SCTY U	15. SHIP TO CLAS FY7624	16. MARK FOR				
B.	B.	B.	D.	D.	D.				
C.	C.	C.	E.	E.	E.				
17. DESCRIPTIVE DATA SEE SECTION H(4) FOR FY7624 ADDRESS. TECHNICAL EFFORT IS TO BE COMPLETED NO LATER THAN 85 MAR 18. DATA TO BE DELIVERED IN ACCORDANCE WITH ATTACHMENT #1, DD FORM 1423, AS IMPLEMENTED BY PARAGRAPH VI, PAGE 12 HEREOF NO LATER THAN 85 OCT 01. DATE SET FORTH ABOVE IS THE DATE FOR GOVERNMENT ACCEPTANCE OF DATA.									

4. ITEM NO. 0002	5. ACRN AA	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. COM ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLINICENT EXHIBIT			
11. DEL SCHED DATE A. 85MAR18	12. ENDING DATE (WHEN APPL) A.	13. DEL SCHEDULE QTY* A. 1	14. SCTY U	15. SHIP TO CLAS FY7624	16. MARK FOR				
B.	B.	B.	D.	D.	D.				
C.	C.	C.	E.	E.	E.				
17. DESCRIPTIVE DATA ALL SUPPORT EFFORTS SHALL BE COMPLETED NO LATER THAN 85 MAR 18. SEE SECTION H(4) FOR FY7624 ADDRESS. SUPPORT FOR CLIN 0001.									

4. ITEM NO. 0004	5. ACRN AA	6. TSP PRI	7. MILSTRIP DOC NO. AND SUFFIX	8. COM ITEM SERIAL NO.	9. ENDING SERIAL NO. (WHEN APPL)	10. CLINICENT EXHIBIT			
11. DEL SCHED DATE A. 86MAY30	12. ENDING DATE (WHEN APPL) A.	13. DEL SCHEDULE QTY* A. 1	14. SCTY U	15. SHIP TO CLAS FY7624	16. MARK FOR				
B.	B.	B.	D.	D.	C				
C.	C.	C.	E.	E.	E.				
17. DESCRIPTIVE DATA SEE SECTION H 4 AND 5 OF THE BASIC CONTRACT FOR FY7624 ADDRESS. ALL CHEMICAL TESTS SHALL BE COMPLETED NO LATER THAN 85 OCT 01.									

RESENTS A NET INCREASE/DECREASE WHEN NO + OR - APPEARS AFTER THE ITEM NO.
E = ESTIMATED
- (IN QTY) = DECREASE
+ OR - (IN ITEM NO.) = ADDITION OR DELETION

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT					PAGE 1 of 19		
2. PROC INSTRUMENT ID NO. (PIIN)	3. SPIIN	4. EFFECTIVE DATE	5. REQUISITION/PURCHASE REQUEST PROJECT NO.	6. BDC/DMS RATING			
F33615-84-D-4402	000401	85FEB05	FY7624-85-01813				
7. ISSUED BY DEPARTMENT OF THE AIR FORCE AIR FORCE SYSTEMS COMMAND AERONAUTICAL SYSTEMS DIV/PMRSC WPAFB, OH 45433-6503 CONTRACT NEGOTIATOR JANA L. GORDIN (513) 255-5616		8. ADMINISTERED BY (IF OTHER THAN BLOCK 7) DCASMA SAN ANTONIO 615 EAST HOUSTON STREET P.O. BOX 1040 SAN ANTONIO, TX 78294					
9. CONTRACTOR NAME AND ADDRESS RADIAN CORPORATION 8501 MO-PAC BLVD P.O. BOX 9948 AUSTIN, TX 78766 (TRAVIS COUNTY) (512) 454-4797		10. SECURITY CLAS U		11. DISCOUNT FOR PROMPT PAYMENT			
CODE 29913		FACILITY CODE		IF "9" FOR MULTIPLE FACILITIES SEE SECT "K"			
		MAILING DATE FEB 26 1985		12. PURCHASE OFFICE POINT OF CONTACT LQF/L58/LQF			
13. THIS BLOCK APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in block 17. <input type="checkbox"/> The hour and date specified for receipt of Offers <input type="checkbox"/> is extended <input type="checkbox"/> is not extended Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation, or as amended by one of the following methods: (a) By signing and returning copies of this amendment. (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE ISSUING OFFICE PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER IF BY OF THIS AMENDMENT YOU DESIRE TO CHANGE AN OFFER ALREADY SUBMITTED, SUCH CHANGE MAY BE MADE BY TELEGRAM OR LETTER PROVIDED SUCH TELEGRAM OR LETTER MAKES REFERENCE TO THE SOLICITATION AND THIS AMENDMENT, AND IS DATED PRIOR TO THE SPOONING HOUR AND DATE SPECIFIED.							
14. THIS BLOCK APPLIES ONLY TO MODIFICATIONS OF CONTRACTS							
<input type="checkbox"/> THIS CHANGE IS ISSUED PURSUANT TO _____ THE CHANGES SET FORTH HEREIN ARE MADE TO THE ABOVE NUMBERED CONTRACT/ORDER. <input type="checkbox"/> THE ABOVE NUMBERED CONTRACT IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (SUCH AS CHANGES IN PAYING OFFICE, APPROPRIATION DATA, ETC.) SET FORTH HEREIN. <input type="checkbox"/> THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF _____ IT MODIFIES THE ABOVE NUMBERED CONTRACT AS SET FORTH HEREIN. <input checked="" type="checkbox"/> THIS MODIFICATION IS ISSUED PURSUANT TO "ORDERING" CLAUSE OF SECTION H OF THE BASIC CONTRACT							
15. CONTRACT ADMINISTRATION DATA							
A. KIND OF MOD	B. MOD ABST	C. DATE OF SIGNATURE MODIFICATION	D. CHANGE IN CONTRACT AMOUNT INCREASE (+) DECREASE (-)	E. LOSING PO/CAO ON TRANSFER	F. GAINING PO/CAO ON TRANSFER	G. SVC/AGENCY USE	
B			\$ 11,394.00				
16. ENTER ANY APPLICABLE CHANGES							
A. PAY	B. EFFECTIVE DATE OF AWARD	C. CONTRACT (1) TYPE (2) INFO	D. TYPE CONTR	E. SURV CRIT	F. SPL CONTR PROVISIONS	G. PAYING OFC CODE	
17. REMARKS (Except as provided herein, all items and conditions of the contract, as heretofore changed, remain unchanged and in full force and effect.)							
SUBJECT: ADDITIONAL WORK MONITORING LABORATORY: USAFOEHL, BROOKS AFB, TX 78235 PROJECT MONITOR: EMILE BALADI, USAFOEHL/TS, BROOKS AFB, TX 78235 FINANCE OFFICE: DCASR DALLAS, 500 SOUTH ERVAY STREET DALLAS, TX 75201 (CODE: S4403A)							
18. CONTRACTOR/OFFEROR IS NOT REQUIRED TO SIGN THIS DOCUMENT							
CONTRACTOR/OFFEROR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN COPIES TO ISSUING OFFICE							
CONTRACTOR/OFFEROR (Signature of person authorized to sign) UNITED STATES OF AMERICA (Signature of Contracting Officer) by Christopher D. Miller							
20. NAME AND TITLE OF SIGNER (Type or print)		21. DATE SIGNED		23. NAME OF CONTRACTING OFFICER (Type or print)		24. DATE SIGNED	
				CHRISTOPHER D. MILLER		85FEB12	

Schedule of Changes

- FIRST: Block 20 of the 55X is revised to read \$377,202.27 in lieu of \$365,808.27, resulting in an increase of \$11,394.00 to the total amount of the order.
- SECOND: The Task Description dated 84 Nov 19 is revised to incorporate the Task Description dated 84 Dec 04, as shown on pages 4-18 herein.
- THIRD: Section F of the schedule is revised as shown on page 19, herein.

PART I SECTION B OF THE SCHEDULE
SUPPLIES LINE ITEM DATA

1. PROC INSTRUMENT ID NO. (PIIN) F33615-84-D-4402
2. SPIIN 000401
3. PAGE 3 OF 19

4. ITEM NO. 0001
5. QUANTITY 1
6. PURCH UNIT LO
7. UNIT PRICE \$ N
8. TOTAL ITEM AMOUNT \$ N
9. FSCM AND PART NUMBER
10. CTRN
11. NSN
12. FSCM AND PART NUMBER
13. CTRN
14. SITE CODES
A. PDA B. ACP C. FOB
U AA N
15. NOUN
16. SVC/AGENCY USE
17. PR/MIPR DATA
FY7624-85-01813-0001
18. AUTHORIZED RATE
A. PROGRESS PAY B. RECoup
19. CONTRACT 20. SVC ID NO.
21. ITEM/PROJ MGR
FY7624
22. 1ST DISCOUNT
A. B. DAYS
23. 2ND DISCOUNT
A. B. DAYS
24. 3RD DISCOUNT
A. B. DAYS
25. NET
A. OVER B. UNDER
26. QUANTITY VARIANCE
A. OVER B. UNDER
27. TYPE 28. OPR
29. CONTRACT

PERFORM ADDITIONAL WORK FOR WELL INSTALLATION IN ACCORDANCE WITH THE TASK DESCRIPTION AS SET FORTH ON PAGES 4 THRU 18 HEREOF, AND SECTION C, DESCRIPTION/SPECIFICATIONS OF THE BASIC CONTRACT; AND SUBMIT DATA IN ACCORDANCE WITH ATTACHMENT #1, THE CONTRACT DATA REQUIREMENTS LIST, (DD FORM 1423) OF THE BASIC CONTRACT AS IMPLEMENTED ON PAGE 12 BY PARAGRAPH VI HEREOF.

4. ITEM NO. 002
5. QUANTITY 1
6. PURCH UNIT LO
7. UNIT PRICE \$ N
8. TOTAL ITEM AMOUNT \$ N
9. FSCM AND PART NUMBER
10. CTRN
11. NSN
12. FSCM AND PART NUMBER
13. CTRN
14. SITE CODES
A. PDA B. ACP C. FOB
U AA N
15. NOUN
16. SVC/AGENCY USE
17. PR/MIPR DATA
FY7624-85-01813-0002
18. AUTHORIZED RATE
A. PROGRESS PAY B. RECoup
19. CONTRACT 20. SVC ID NO.
21. ITEM/PROJ MGR
FY7624
22. 1ST DISCOUNT
A. B. DAYS
23. 2ND DISCOUNT
A. B. DAYS
24. 3RD DISCOUNT
A. B. DAYS
25. NET
A. OVER B. UNDER
26. QUANTITY VARIANCE
A. OVER B. UNDER
27. TYPE 28. OPR
29. CONTRACT

SUPPORT FOR ITEM 0001 ABOVE.

REPRESENTS NET AMOUNT OF INCREASE/DECREASE WHEN MODIFYING EXISTING ITEM NO.

N = NOT APPLICABLE
U = UNDEFINIZED
NSP = NOT SEPARATELY PRICED

E = ESTIMATED
- (IN QTY AND \$) = DECREASE
+ OR - (IN ITEM NO.) = ADDITION OR DELETION
CIRR = CONTROLLED ITEM RPT QGMT

SITE CODES: S = SOURCE
D = DESTINATION
O = INTERMEDIATE

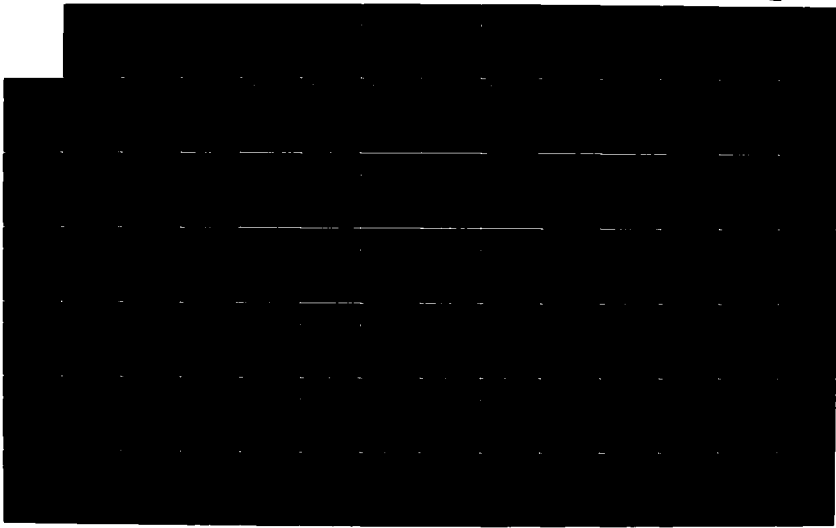
AD-A175 325

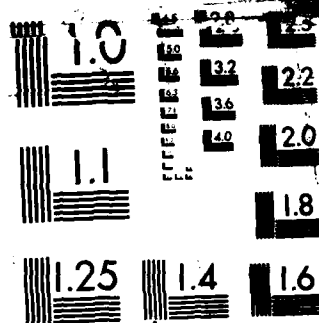
INSTALLATION RESTORATION PROGRAM PHASE II
CONFIRMATION/QUANTIFICATION STA. (U) RADIAN CORP AUSTIN
TX SEP 86 F33615-84-D-4482

7/9

UNCLASSIFIED

F/G 13/2 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

INSTALLATION RESTORATION PROGRAM
PHASE II, STAGE 1, TASK DESCRIPTION
CANNON AFB NM *

84 Dec 04

I. DESCRIPTION OF TASK:

The purpose of this task is to determine if environmental contamination has resulted from waste disposal practices, fuel spills/leaks and fire training activities at Cannon AFB; to provide estimates of the magnitude and extent of contamination, should contamination be found; to identify potential environmental consequences of migrating pollutants; and to determine any additional investigations necessary to identify the magnitude, extent and direction of movement of discovered contaminants.

The Phase I IRP report (mailed under separate cover) gives background information and describes the sites for this task. To accomplish the survey effort, take the following action:

A. General

1. Well Installation

a. Comply with the U.S. EPA Publication 33019-S1-002, NEIC Manual for Ground Water/Subsurface Investigations at Hazardous Waste Sites for monitoring well installation.

b. Install 4 groundwater monitoring wells. The total maximum depth of well installed shall not exceed 1600 linear feet. Accomplish monitor well drilling using air rotary methods with an 8-inch bit. Collect, containerize, describe and log representative geologic samples at 5-foot intervals during drilling operations. Also compile formation logs.

c. Construct wells of slotted 4-inch I.D., Schedule 80, screw joint PVC casing. Only screw type joints shall be used; glued fittings are not permitted. Tremie a gravel pack consisting of clean, washed pea gravel into place around the annulus between the screen and the boring from the bottom of the hole to approximately five feet above the screen. Then place one foot of clean, washed, fine grained sand above the gravel pack. Position three feet of bentonite pellets above the sand. Set the bentonite to insure a seal is formed. Grout the remainder of the hole in stages.

d. Screen each well 15 feet below the water table surface using 4-inch I.D., Schedule 80 PVC with 0.010-inch mill slots. Cap the bottom of the screen. Flush thread all connections.

e. Base officials determine which method is used to complete the well surface. (1) If well stick-up is of concern in an area, complete the well flush with the land surface. In the case of a flush completion, cut the PVC casing two to three inches below land surface, and cement a protective locking lid in place. The protective lid will consist of a cast-iron valve box assembly cemented in place with concrete. Insure that free drainage is maintained within the valve box. Also, provide a PVC casing cap to prevent infiltration of surface water. (2) If an above ground surface completion is

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* Highlights of modification C-26 underscored

used, extend the PVC well casing two or three feet above land surface. Provide an end-plug or casing cap for each well. Shield the extended PVC casing with a six-inch diameter steel guard pipe which is placed over the PVC casing and cap and seated in a 16-inch by 16-inch by 4-inch concrete surface pad. Install a lockable cap or lid at the casing top to discourage vandalism. Position three 3-inch diameter steel guard posts, each six feet in total length, radially from each wellhead. Recess the guard posts approximately 2 feet into the ground and insure they are removable to facilitate access for sampling pump installation. Provide a locking mechanism to prevent unauthorized removal.

f. Develop each well as soon as practical after completion by surging and/or bailing. Continue well development until the discharge water is clear and free of sediment to the fullest extent practical. Measure and record well locations on a site map.

g. Provide a dedicated sampling apparatus at each well consisting of an appropriate submersible pump with a pumphead check valve. Set the pump to a depth of 10 feet below static water level, as conditions allow. Proceed with pump installation after the well has been properly developed. Extend the sampling pump discharge line consisting of PVC tubing/pipe through the top of the wellhead. Do not use glues, solvents or thread dressings. Provide electrical service to the pump using PVC-clad wirings with Teflon[®] shrink tubing seals over splices. Suspend pumps with a stainless steel cable. Provide appropriate connections at each wellhead for coupling a sampling discharge line and back-pressure valve. Also provide an electrical connection for attaching a portable field generator and electrical overload protection (i.e., lighting, line surges, and pump overload) for each well pump. Protect all surface connection points from weathering or possible vandalism by enclosing them at the wellhead or by placing them within the protective well casing or valve box.

h. Survey all contractor installed wells for location and elevation (feet above mean sea level) at the top of each well casing. Accuracies of 0.05 feet for elevation and 10 feet for horizontal location are required. Record locations on a site map.

2. Deep Soil Boring

a. Conduct 41 deep soil borings not to exceed a maximum of 2500 linear feet. Accomplish the borings using 7 1/2-inch hollow-stem auger techniques. Extend each deep boring to penetrate the shallow caliche layer, an estimated total depth of 60 feet below ground surface. Obtain split-spoon samples, ASTM Method D-1536, near the top of the caliche, 5 feet into the caliche and just below the caliche layer. Immediately cap a portion of the tubed sample and archive it in frozen storage.

b. During the deep boring operations, develop lithographic descriptions and stratigraphic logs. Place special emphasis on field identification of soil contamination.

3. Shallow Soil Boring

a. Perform six shallow soil borings not to exceed a total depth of 60 linear feet. Use a hand auger equipped with a 4-inch diameter stainless steel bucket.

b. Collect soil samples at 1 foot below ground surface and at the total depth of each augering. Total depth of augering and sampling operations will be approximately 10 feet below ground surface. Total depth may be less at locations where significant obstructions (natural or man-made) are encountered. Place the soil samples collected during augering operations into wide-mouth mason jars with Teflon lined lids. Archive a portion of each sample into frozen storage.

c. Develop lithographic descriptions and stratigraphic logs during shallow soil augering. Place special emphasis on the visual identification of contamination.

4. Tremie grout all boreholes to the surface with a cement/bentonite grout. It is especially important to insure that the caliche layer be adequately resealed to preclude future migration of contaminants through the caliche.

5. Mark each borehole location with a permanent marker (where practical), and record the location on a site specific project map.

6. Remove all well and boring drill cuttings and clean the general area following the completion of each well or borehole. Properly containerize drill cuttings suspected of being hazardous waste (based on discoloration, odor or organic vapor detection instrument) according to base Civil Engineering requirements. Test the suspected hazardous waste for EP Toxicity and Ignitibility; test a maximum of 25 samples for EP Toxicity and Ignitibility. The contractor is not responsible for ultimate disposal of the contaminated drill cuttings. Disposal will be through base personnel.

7. Determine the exact field location of all boreholes and monitor wells during the planning/mobilization phase of the field investigation. Consult with base personnel to minimize disruption of base activities, to properly locate borings with respect to exact locations of spill/leak sites and to avoid utilities. The senior on-site contractor representative in consultation with a government point of contact (see Section V) shall establish boring locations. The contractor shall direct the drilling and sampling and maintain a detailed log of the conditions and materials penetrated during the course of the work.

8. Collect and analyze one water sample from each monitor well. If the well(s) cannot be sampled due to well development, well characteristics, or other reason(s), indicate the reason(s) in the report specified in Item VI below.

9. Collect and analyze soil samples from each borehole.

10. Analyze water and soil samples collected in A.3 and A.9 above for those contaminants summarized in Table 1, Atch 1 and Table 2, Atch 2. Required detection limits for the above analyses are specified in Table 3, Atch 3.

11. When analyzing water samples for nitrates (as N), use EPA Method 353.1 as specified in Table 2, Atch 2. EPA Method 353.1 requires specific instrumentation which is to be procured and solely dedicated to this IRP analyses effort. Upon completion of this sampling effort and at direction of the USAF OEHL/TS, forward the instrument and its associated modules to the USAF OEHL. Procure the following equipment for the nitrate analyses:

Technicon Auto Analyzer II Basic Single Channel System. Part #460-0017-TV, consisting of the following modules:

- 171 - A017 - 03, 1 - Sampler IV
- 133 - A014 - 08, 1 - Proportioning Pump III, single speed
- 011 - A036 - 05, 1 - Recorder, Single pen
- 199 - A001 - 05, 1 - Colorimeter, Single channel
- 161 - A007 - 01, 1 - Voltage Stabilizer
- 615 - 0081 - 01, 1 - Electrical Outlet Strip
- 514 - 8162 - 01, 1 - Adapter
- 116 - D049 - 01, 1 - Nitrate/Nitrite in Water (0.04-2 mg/L)
- 170 - B070 - 28, 1 - Set/2 Interference Filters, 520 nm
- 1 - Accessory Kit, Consisting of an Initial Supply of Tubing and Fittings

SUGGESTED SOURCE: Technicon Industrial Systems
511 Benedict Ave., Tarrytown NY 10591 (914) 631-8000

12. When using EPA Methods 601 and 602, second column confirmation is required when parameters measured exceed those values identified in Table 4, Atch 4. Conduct second column confirmation on a maximum of 50% of the samples collected for these analyses. Total number of samples for EPA Methods 601 and 602 and Standard Methods 509A and 509B in Atch 1 include this confirmation analysis.

13. Analyze all water samples collected on site for pH, temperature and specific conductance. Sampling, maximum holding time and preservation of samples shall strictly comply with the following references: Standard Methods for the Examination of Water and Wastewater, 15th Ed. (1980), pp. 35-42; ASTM, Section II, Water and Environmental Technology; Methods for Chemical Analysis of Waters and Wastes, EPA Manual 600/4-79-020, pp. xiii to xix (1979); and Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA 600/14-82-057.

14. The contractor's specific Quality Assurance/Quality Control (QA/QC) protocols and procedures require split samples for all samples. Analyze one set of samples and forward the other set of samples through overnight delivery to:

USAF OEHL/SA
Bldg 140
Brooks AFB TX 78235

F33615-84-D-4402/000401

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Include the following information with the samples sent to the USAF OEHL/SA:

- a. Purpose of sample (analyte)
- b. Installation name (base)
- c. Sample number (on containers)
- d. Source/location of sample
- e. Contract task number and title of project
- f. Method of collection (bailer, suction pump, air-lift pump, etc.)
- g. Volumes removed before sample taken
- h. Special conditions (use of surrogate standard, special nonstandard preservatives, etc.)
- i. Preservative used

Forward this information with each sample by properly completing an AF Form 2752 (mailed under separate cover). In addition, attach copies of field logs documenting sample collection with the samples. Maintain chain-of-custody records for all samples, field blanks and quality control duplicates.

15. Determine the areal extent of each site by reviewing available aerial photos of the base and by field reconnaissance.

16. Plot and map field data collected for each site. Estimate the nature, magnitude and potential for contaminant flow within the site to receiving streams and groundwaters. Upon completion of the sampling and analysis, tabulate the data in the next R&D Status report as specified in Item VI below.

17. Monitor the air during all well and borehole drilling and measure the generation of toxic/hazardous materials. Include the results of air monitoring in the borehole and well logs.

B. In addition to items specified in A. above, conduct the following specific actions at the sites identified:

1. Site 9, Fire Department Training Area No. 4

a. Make two deep soil borings in the suspected area of contamination according to section A.2. Determine the exact location in the field.

b. Collect soil samples immediately above, 5 feet into and below the caliche layer (approx. 60 ft) and analyze these samples for parameters listed in Table 1, Aitch 1.

2. Site 5, Landfill No. 5

a. Drill and install four groundwater monitoring wells according to section A.1, the maximum depth of each well not to exceed 300 linear feet. Position three wells along the landfill perimeter consistent with the assumed downgradient direction of groundwater flow. Place the fourth monitor well at the landfill perimeter in the assumed upgradient direction of groundwater flow.

b. After well development, collect one water sample from each monitor well and analyze for those parameters shown in Table 1, Atch 1 and Table 2, Atch 2.

3. Site 15, AGE Drainage Ditch - same as B.1. above.

4. Site 6, Fire Department Training Area No. 1 - same as B.1. above.

5. Site 11, Engine Test Cell Overflow Pit and Leaching Field - same as B.1. above.

6. Site 4, Landfill No. 4

a. Make a maximum of seven deep soil borings according to section A.2 inside the landfill perimeter. Position the boreholes so as to adequately determine the existence of contaminants at this site. Determine exact borehole locations in the field.

b. Prior to ground penetration, conduct a metal detection survey of each site. Use a Fisher M-Scope TV-5 Varied Metal Locator or equivalent instrument. Do not install boreholes directly over locations where buried drums have potentially been identified. Should boring returns indicate a waste container has been punctured, cease drilling immediately and tremie grout the borehole to the surface with a cement/bentonite grout. Collect a contaminated soils sample and test the suspected hazardous waste for EP Toxicity and Ignitability in accordance with paragraph A.6. If no instance shall the caliche layer be penetrated within 100 feet of a borehole site where it is suspected a waste container has been punctured.

c. Collect soil samples immediately above, 5 feet into and just below the caliche layer (approx. 60 ft) and analyze these samples for parameters listed in Table 1, Atch 1.

7. Site 1, Landfill No. 1 - same as B.6 above except make a maximum of five deep soil borings.

8. Site 3, Landfill No. 3 - same as B.6 above except make a maximum of nine deep soil borings.

9. Site 2, Landfill No. 2 - same as B.6 above except make a maximum of five deep soil borings.

10. Site 19, MOGAS Spill - same as B.1 above

11. Site 17, Entomology Rinse Area

a. Make three deep soil borings surrounding the site according to section A.2. Determine the exact location in the field.

b. Collect soil samples immediately above, 5 feet into and just below the caliche layer (approx. 60 ft) and analyze these samples for parameters listed in Table 1, Atch 1.

12. Site 7, Fire Department Training Area No. 2 - same as B.1 above, except make only one deep soil boring in the suspected area of contamination.

13. Site 8, Fire Department Training Area No. 3 - same as B.12 above.

14. Site 12, Stormwater Collection Point

a. Make three shallow soil hand borings in the suspected area of contamination according to section A.3. Determine the exact locations in the field.

b. Collect soil samples at 1 foot below ground surface and at the total boring depth (approx. 10 ft). Analyze these samples for parameters listed in Table 1, Atch 1.

15. Site 13, Sewage Lift Station Overflow - same as B.14 above except that only two shallow soil borings are needed in the suspected area of contamination.

16. Site 16, Solvent Disposal Site - same as B.14 above except that only one shallow soil boring is needed in the suspected zone of contamination.

C. Data Review

1. Tabulate sampling and analysis results, incorporate them into the monthly R&D Status Reports and forward to the USAF OEHL for review as soon as they become available as specified in Item VI below.

2. Upon completion of all analyses, tabulate and incorporate all results into an Informal Technical Information Report (Atch 1, Seq 3 and Atch 3, Seq 2 as specified in Item VI below) and forward to USAF OEHL for review.

D. Reporting

1. Prepare a draft report delineating all findings of this field investigation and forward it to the USAF OEHL (as specified in Item VI below) for Air Force review and comment. Include in this report a discussion of regional/site specific hydrogeology, well and boring logs, data from water level surveys, groundwater surface and gradient maps, water quality and soil analysis results, quality control sample data, available geohydrologic cross-sections and laboratory quality assurance information. Follow the USAF supplied report format (mailed under separate cover).

2. In the recommendation section, address each site and list them by categories. Category I consists of sites where no further action, including remedial action, is required. Data for these sites are considered sufficient to rule out unacceptable health or environmental risks. Category II sites are those requiring additional monitoring or work to quantify or further assess the extent of current or future contamination. Category III sites are sites that will require remedial actions (ready for IRP Phase IV actions). In each case, summarize or present the results of field data, environmental or regulatory criteria, or other pertinent information supporting these conclusions.

3. Make estimates of the magnitude, extent and direction of movement of contaminants discovered. Identify potential environmental consequences of discovered contamination, where known.

4. Identify specific requirements, if any, for future groundwater and surface water monitoring.

E. Meetings:

Attend one meeting with representatives of the Air Force and regulatory agencies to take place at Cannon AFB for a duration of one day (eight hours). Date and time to be specified by USAF OEHL.

II. SITE LOCATION AND DATES:

Cannon AFB NM
Building and time to be established.

III. BASE SUPPORT: Cannon AFB will provide the following:

A. Prior to any contractor digging or drilling, locate underground utilities and issue digging permits, if applicable.

B. Secure area for contractor equipment, approximately 2500 square feet.

C. Coordination with base fire, health and safety offices.

D. Temporary construction barriers and parking/traffic control support for wells sited in vehicle traffic areas.

E. Transport of contaminated drill cuttings and designation of a disposal site for these cuttings.

F. Transportation of contaminated groundwater and designation of a disposal site for contaminated groundwater generated during well development.

IV. GOVERNMENT FURNISHED PROPERTY: None

V. GOVERNMENT POINTS OF CONTACT:

- | | |
|---|---|
| <p>1. Maj Edward Barnes
USAF OEHL/TS
Brooks AFB TX 78235
(512) 536-2158
AV 240-2158</p> | <p>2. Col Jerry Dougherty
HQ TAC/SGPB
Langley AFB VA 23665
(804) 764-2180
AV 432-5857</p> |
| <p>3. Lt Eric Soott
USAF Hosp Cannon/SGPB
Cannon AFB NM 88103
(505) 784-3311
AV 681-3063/3064</p> | |

VI. In addition to sequence numbers 1*, 5 and 11 listed in Atch 1 to the contract, which are applicable to all orders, the reference numbers below are applicable to this order. Also shown are data applicable to this order.

*Forward a copy of R&D Status Report to all government POCs identified in Section V.

Sequence No.	Block 10	Block 11	Block 12	Block 13	Block 14
Atch 1					
3	O/TIME	**	**		2
4	ONE/R	85MAR18	85JUL01	85OCT01	*

Atch 3

2	O/TIME	**	**	2
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*Two draft reports are required. After incorporating Air Force comments concerning the first draft report, supply the USAF OEEL with one copy of the second draft report. Upon acceptance of the second draft, distribute the remaining 24 copies as specified by the USAF OEEL. Supply 50 copies plus the original camera ready copy of the final report and distribute them as specified by the USAF OEEL.

**Upon completion of analytical effort.

TABLE 1
 EXP PHASE II, STAGE 1, SAMPLING PARAMETERS
 CANNON AFB NM

SITE	OIL & GREASE	TOI	1212	TOC	PESTICIDES ⁹	INORGANIC SPECIES	OTHER
9	65	65	65	-	-	-	-
5	-	47	47	47	-	47 ^c	47 ^d
15	73 ^b	73 ^b	73 ^b	-	-	-	-
6	55	55	55	-	-	-	-
11	75 ^b	75 ^b	75 ^b	-	-	-	-
4	235 ^b	235 ^b	235 ^b	235 ^b	-	235 ^{b,c}	-
1	165 ^b	165 ^b	165 ^b	165 ^b	-	165 ^{b,c}	-
3	285 ^b	285 ^b	285 ^b	285 ^b	-	285 ^{b,c}	-
2	165 ^b	165 ^b	165 ^b	165 ^b	-	165 ^{b,c}	-
19	75 ^b	-	75 ^b	-	-	-	-
17	-	105 ^b	-	105 ^b	135 ^b	105 ^{b,d}	-
7	35	35	35	-	-	-	-
8	35	35	35	-	-	-	-
12	75 ^b	75 ^b	75 ^b	-	-	75 ^{b,c}	-
13	45	45	45	-	-	45 ^c	-
16	25	25	25	-	-	25 ^c	-
TOTAL ^f	1355	1355, 4V	1355, 4V	935, 4V	135	1065, 4V	47

S = Soil sample

V = Water sample

^aSee Table 2

^bIncludes GC samples

^cArsenic, barium, cadmium, chromium (total), copper, iron, nickel, mercury, selenium, silver, zinc

^dArsenic, mercury

^eArsenic, barium, cadmium, copper, chromium (total), - mercury, manganese, selenium, silver, zinc

^fTotals do not include a maximum of 25 samples for EP Toxicity and Ignitibility analyses.

^gAlarin, DOT Insecter, Dieldrin, Endrin, Heptachlor, Heptachlor epoxide, Lindane, Methoxychlor, Phosalone, Malathion, Parathion, Tenaphene, 2,4-D, 2,4,5-T, 2,4,5-TP (allven).

^hIncludes 50% increase for second-volume confirmation.

TABLE 2

LIST OF CHEMICAL ANALYSES FOR SAMPLES OBTAINED FROM
SITE 5, LANDFILL NO. 5, AREA MONITOR WELLS

Purgeable Halocarbons, EPA Method 601

Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chlorobenzene
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Chloromethane
Dibromochloromethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane-
1,1-Dichloroethene
trans-1,2-Dichloroethene
1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Methylene chloride
1,1,2,2-Tetrachloroethane
Tetrachloroethene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

Purgeable Aromatics, EPA Method 602

Benzene
Chlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Ethylbenzene
Toluene

General Ions

Calcium	EPA Method 200.7
Magnesium	EPA Method 200.7
Sodium	EPA Method 200.7
Potassium	EPA Method 200.7
**Manganese	EPA Method 200.7
**Chloride	EPA Method 325.2
Sulfate	EPA Method 375.3
Phosphate (Total)	EPA Method 365.4
*Nitrate (AS-N)	EPA Method 353.1

General Water Quality

**pH
**Total Dissolved Solids
Conductivity

*Interim Primary Drinking Water
Standard Parameter (40 CFR 141)

**Secondary drinking water regu-
lation parameter (40 CFR 143)

TABLE 3
ANALYTICAL PARAMETERS, METHODS AND REQUIRED DETECTION LIMITS

Detection limits are $\mu\text{g/g}$ for soil unless noted otherwise:

<u>PARAMETER</u>	<u>METHOD</u>	<u>DETECTION LIMIT ($\mu\text{g/g}$)</u>
Oil and Grease (using IR)	EPA 413.2	100
Total Organic Carbons (TOC) ^a	EPA 415.1	1000 (1000 $\mu\text{g/L}$ water)
Total Organic Halogen (TOX) ^a	EPA 9020	5 (5 $\mu\text{g/L}$ water)
Purgeable Halocarbons and Aromatics (VOA)	EPA 601 and 602	b
EP Toxicity	EPA 7310	c
Ignitibility	EPA 1010	d
Total Dissolved Solids	EPA 160.1	1000 $\mu\text{g/L}$ water
Arsenic ^f	EPA 206.2 or 206.3	10 $\mu\text{g/L}$ of solution
Barium ^f	EPA 208.2	200 $\mu\text{g/L}$ of solution
Cadmium ^f	EPA 213.2	0.2 (10 $\mu\text{g/L}$ of solutions)
Copper ^f	EPA 220.1	0.4 (20 $\mu\text{g/L}$ of solution)
Chromium ^f	EPA 218.1	5 (50 $\mu\text{g/L}$ of solution)
Iron total ^g	EPA 236.1	100 $\mu\text{g/L}$ of solution
Lead ^f	EPA 239.2	2 (20 $\mu\text{g/L}$ water)
Manganese ^g	EPA 243.1	50 $\mu\text{g/L}$ of solution
Mercury ^f	EPA 245.1 and 245.5 (soils)	0.1 (1 $\mu\text{g/L}$ water)
Nickel	EPA 249.1	100 $\mu\text{g/L}$ of solution
Selenium ^f	EPA 270.3	10 $\mu\text{g/L}$ of solution
Silver ^f	EPA 272.2	10 $\mu\text{g/L}$ of solution
Specific Conductance	EPA 120.1	1 ^e (water)
Zinc ^g	EPA 289.1	50 $\mu\text{g/L}$ of

F33615-84-D-4402/000401

(Table 3 Continued)

<u>PARAMETER</u>	<u>METHOD</u>	<u>DETECTION LIMIT (ug/g)</u>
Aldrin	Standard Method 509A	0.02
DDT isomer	Standard Method 509A	0.02
Dieldrin	Standard Method 509A	0.02
Endrin ^f	Standard Method 509A	0.02
Heptachlor	Standard Method 509A	0.02
Heptachlor epoxide	Standard Method 509A	0.02
Lindane ^f	Standard Method 509A	0.01
Methoxychlor ^f	Standard Method 509A	0.20
Diazinon	Standard Method 509A	0.02
Malathion	Standard Method 509A	0.10
Parathion	Standard Method 509A	0.02
Toxaphene ^f	Standard Method 509A	1.00
2,4-D ^f	Standard Method 509B	0.06
2,4,5-T	Standard Method 509B	0.06
2,4,5-TP (silvex) ^f	Standard Method 509B	0.06

^aDetection levels for TOC and TOI must be 3 times the noise level of the instrument. Laboratory distilled water must show no response. If so, corrections of positive results must be made.

^bDetection limits for Volatile Organic Compounds shall be as specified for the compounds by EPA Methods 601-602. Method: Federal Register, Vol. 44, No. 233, pp 69468-69473. This method should be strictly followed including these items:

Item 1.4 - This method is recommended by EPA for use only by experienced residue analysts or under the close supervision of such qualified persons.

Item 2.2 - This is most important. If interferences are encountered (as in early peaks such as vinyl chloride), the method provides a secondary chromatographic column that will be helpful in resolving the compounds of interest from interferences. This must be done in the case of vinyl chloride and so noted in the analysis report.

Items 3.3, 7.1-7.3 - These sections must be analyzed within the recommended holding times.

Item 3.3 - All samples must be analyzed within the recommended holding times. This must be followed without exception.

If questions are encountered about certain contaminants, you may be asked to show both chromatograms used to rule out possible interferences.

<u>Metal</u>	<u>µg/L of solution</u>
As	10
Ba	200
Cd	10
Cr	50
Pb	20
Hg	1
Se	10
Ag	10

^d Find if sample is ignitable at 140 degrees Fahrenheit or below. If so, it is a hazardous waste.

^e Concentration is in micromhos

^f Primary Drinking Water Standard, 40 CFR 141.11

^g Secondary Drinking Water Standard, 40 CFR 143.3

TABLE 4

If analytes analyses exceed the detection limits identified below, second column confirmation is required:

<u>EPA Method 601 & 602</u>	<u>Detection Level (ug/L)</u>
Benzene	0.7
Carbon	4.0
Chloroform	10
1,2 Dichloroethane	0.1
Methylene Chloride	4.0
Tetrachloroethylene	4.0
Toluene	10
1,1,1-Trichloroethane	10
Trichloroethylene	1.0
Vinyl Chloride	1.0
Dichlorobenzene isomers	Sum greater than 10
Any other organics	>10

<u>Standard Method 509A and 509B</u>	<u>Detection Level ug/l</u>
Aldrin	10
Lindane	.004
2,4-D	10
2,4,5-T	10
2,4,5-TP (Silver)	10
Dieldrin	10
Heptachlor	0.02
Heptachlor epoxide	0.01
Any other pesticide	>10

"Retention times on both columns must match before reporting positive value. If no match, it will be considered an interference."

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APPENDIX D
Well Numbering System

APPENDIX D

WELL NUMBER SYSTEM

The wells and borings drilled at Cannon AFB during the Phase II (Stage 1) investigation are identified by an alpha-numeric label. Monitoring wells are labeled with the letters MW followed by a dash and then a letter (e.g. MW-A, MW-B). The soil sampling holes are labeled with the letters SB followed by a dash and then an arabic numeral (e.g. SB-4). Soil samples collected during the drilling are denoted using the number for the sample hole and a letter indicating the order of drilling at the site. An Arabic numeral gives the position of the sample within the individual soil boring (e.g. SB-4D-4). The sampling method is indicated by either the letters ST for Shelby Tube, HA for Hand Auger, or SS for Split Spoon.

APPENDIX D

SOIL BORINGS, CANNON AFB

Sampler: DLR/WLB/TKW

<u>Sample#/Type#</u>	<u>Depth Interval</u>	<u>Date Collected</u>
SB-8-1 ST	1.5-2.0'	11/17-84
SB-8-2 ST	7.5-9.5'	11/17/84
SB-8-3 ST	59.8-61.5'	11/17/84
SB-7-1 ST	1.0-2.5'	11/18/84
SB-7-2 ST	5.0-6.0'	11/18/84
SB-7-3 ST	57.4-58'	11/18/84
SB-6A-1 ST	3.8-4.8'	11/19/84
SB-6A-2 ST	9.6-10.6'	11/19/84
SB-6A-3 ST	47.5-48.6'	11/19/84
SB-6B-1 ST	3.5-4.5'	11/20/84
SB-6B-2 ST	9.5-10.5'	11/20/84
SB-6B-3 ST	47.5-48'	11/20/84
SB-3A-1 ST	3.0-4.5'	2/13/85
SB-3A-2 ST	9.5-11.0'	2/13/85
SB-3A-3 SS	57.5-59.5'	2/13/85
SB-3B-1 ST	3.0-5.0'	2/14/85
SB-3B-2 ST	10.0-11.0'	2/14/85
SB-3B-3 ST	57.5-58.5'	2/14/85
SB-3C-1 ST	3.0-4.0'	2/14/85
SB-3C-2 ST	9.0-10.0'	2/14/85
SB-3C-3 SS	57.5-59.5	2/14/85
SB-3D-1 ST	2.5-4.0'	2/16/85
SB-3D-1a ST	2.5-4.0'	2/16/85
SB-3D-2 ST	9.0-11.0'	2/16/85
SB-3D-3 SS	57.5-59.5'	2/16/85
SB-3F-1 ST	3.5-5.0'	2/15/85

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Sampler: DLR/WLB/TKW

<u>Sample#/Type#</u>	<u>Depth Interval</u>	<u>Date Collected</u>
SB-3F-2 ST	10.0-11.5'	2/15/85
SB-3F-3 SS	55.5-57.0'	2/15/85
SB-3G-1 ST	2.0-4.0'	2/15/85
SB-3G-2 ST	9.5-10.5'	2/15/85
SB-3G-3 SS	57.5-59.5	2/15/85
SB-3H-1 ST	2.0-4.0'	2/22/85
SB-3H-2 ST	9.0-11.0'	2/22/85
SB-3H-3 SS	57.5-58.0'	2/22/85
SB-3I-1 ST	0-2'	2/22/85
SB-3I-2 ST	7-9'	2/22/85
SB-3I-3 SS	57.5-59.5'	2/22/85
SB-4A-1 ST	1-2'	2/8/85
SB-4A-2 ST	7-9'	2/8/85
SB-4A-3 ST	62.5-63.0'	2/8/85
SB-4B-1 ST	1-3'	2/8/85
SB-4B-2 ST	8-10'	2/8/85
SB-4F-1 ST	2-3.5'	2/9/85
SB-4F-2 ST	8-9'	2/9/85
SB-4F-3 SS	57.5-60.5'	2/9/85
SB-4C-1 ST	3-4.5'	2/9/85
SB-4C-2 ST	9.5-11.0'	2/9/85
SB-4C-3 ST	52.5-54.0'	2/9/85
SB-4G-1 ST	2.0-4.0'	2/10/85
SB-4G-2 ST	9-11'	2/10/85
SB-4G-3 ST	52.5-53.0'	2/10/85
SB-4E-1 ST	3.0-4.5'	2/11/85
SB-4E-1a ST	3.0-4.5'	2/11/85
SB-4E-2 ST	9.5-11.0'	2/11/85
SB-4E-3 ST	52.5-54.0'	2/11/85

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Sampler: DLR/WLB/TKW

<u>Sample#/Type#</u>	<u>Depth Interval</u>	<u>Date Collected</u>
SB-4D-1 ST	1.5-2.9'	2/11/85
SB-4D-2 ST	15-17'	2/11/85
SB-4D-3 ST	27.5-28.5'	2/11/85
SB-4D-4 ST	47.5-49.0'	2/11/85
SB-15A-1 ST	3.0-4.1'	1/26/85
SB-15A-2 ST	8.5-9.5'	1/26/85
SB-15A-3 ST	47.5-50.0'	1/26/85
SB-15B-1 ST	4.0-5.5'	1/27/85
SB-15B-1a ST	4.0-5.5'	1/27/85
SB-15B-2 ST	9.0-10.5'	1/27/85
SB-15B-3 ST	52.5-54.0'	1/27/85
ST-1 HA	3.0-4.0'	1/14/85
ST-1A HA	3.0-4.0'	1/14/85
ST-2 HA	3.0-4.0'	1/14/85
ST-3 HA	3.0-4.0'	1/14/85
SB-1A-1 ST	6.0-7.0'	2/16/85
SB-1A-2 ST	11.5-11.75'	2/16/85
SB-1A-3 ST	42.5-43.5'	2/24/85
SB-1B-1 ST	4.0-6.0'	2/24/85
SB-1B-2 ST	15.0-16.0'	2/24/85
SB-1B-3 ST	42.5-44.5'	2/24/85
SB-1C-1 ST	4.0-6.0'	2/25/85
SB-1C-1a ST	4.0-6.0'	2/25/85
SB-19A-1 Grab	3.0-4.0'	12/18/84
SB-19A-1a Grab	3.0-4.0'	12/18/84
SB-19A-2 Grab	8.0-9.0'	12/18/84
SB-19A-3 Grab	45.0-47.0'	12/18/84
SB-19B-1 ST	0.0-1.0'	12/19/84
SB-19B-2 ST	9.0-10.0'	12/19/84
SB-19B-3 ST	57.5-59.5'	12/19/84

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Sampler: DLR/WLB/TKW

<u>Sample#/Type#</u>	<u>Depth Interval</u>	<u>Date Collected</u>
SB-1C-2 ST	11.0-12.0'	2/25/85
SB-1C-3 ST	42.5-43.5'	2/25/85
SB-1D-1 ST	4.0-5.0'	3/25/85
SB-1D-2 ST	12.0-12.5	3/25/85
SB-1D-3 ST	42.5-43.5'	3/25/85
SB-1E-1 ST	4.0-5.0'	2/25/85
SB-1E-2 ST	12.0-12.5'	2/25/85
SB-1E-3 ST	52.5-53.0'	2/25/85
SB-13A-1 HA	0-1'	2/27/85
SB-13A-2 HA	2-3'	2/27/85
SB-13B-1 HA	1.0-1.5'	2/27/85
SB-13B-2 HA	4-5'	2/27/85
SB-3E-1 ST	2.0-4.0'	2/23/85
SB-3E-2 ST	7.5-9.5'	2/23/85
SB-3E-3 ST	57.5-58.5'	2/23/85
SB-17A-1 ST	2-4.0'	11/27/84
SB-17A-2 ST	5-6.0'	11/27/84
SB-17A-3 ST	7.5-9.6'	11/27/84
SB-17A-4 ST	62.5-63.0'	11/27/84
SB-17B-1 ST	4.0-5.5'	11/28/84
SB-17B-2 ST	9.5-10.5'	11/28/84
SB-17B-2a ST	9.5-10.5'	11/28/84
SB-17C-1 ST	2.0-4.0'	1/14/85
SB-17C-2 ST	9.5'-10.5'	1/14/85
SB-17C-3 ST	57.5-58.0'	1/14/85
SB-11A-1 ST	1.0-2.0'	1/14/85
SB-11A-2 ST	5.0'-7.0'	1/14/85
QA-1 ST	5.0'-7.0'	1/14/85
SB-11B-1 ST	2.0-4.0'	1/20/85
SB-11B-2 ST	5.5-7.0'	1/20/85
SB-11B-3 ST	46.5-47.5'	1/20/85

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Sampler: DLR/WLB/TKW

<u>Sample#/Type#</u>	<u>Depth Interval</u>	<u>Date Collected</u>
SB-9A-1 ST	5.5-7.0'	1/22/85
SB-9A-2 ST	10.5-11.5'	1/22/85
SB-9A-2A ST	10.5-11.5'	1/22/85
SB-9B-1 ST	4.0-5.5'	1/22/85
SB-9B-2 ST	9.0-10.5'	1/22/85
SB-9B-3 G	43.0-45.0	1/22/85
SB-2A-1 ST	4.0-5.0'	1/23/85
SB-2A-2 ST	9.0-10.0'	1/23/85
SB-2B-1 ST	4.0-5.0'	1/23/85
SB-2B-2 ST	9.0-10.0'	1/23/85
SB-2C-1 ST	4.0-5.0'	1/24/85
SB-2C-2 ST	9.0-10.0'	1/24/85
SB-2D-1 ST	4.0'-5.0'	1/25/85
SB-2D-2 ST	9.0'-10.0'	1/25/85
SB-2E-1 ST	4.0'-5.0'	1/26/85
SB-2E-2 ST	9.0-10.0'	1/26/85
SB-2E-3 ST	52.5-53.5'	1/26/85
SB-2C-1a ST	4.0-5.0'	3/11/85

ST = Shelby tube; SS = Split-spoon; HA = Hand auger

APPENDIX E

Well Logs

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Completion Log: Sheet 1 of 2

Well No. Monitor Well A Project Cannon AFB IRP
Location Landfill No. 5 Log Recorded by T.K. Walters

Construction

Construction Started January 4, 1985 Completed January 7, 1985
Total Depth Drilled (ft) 365 Hole Diameter 8-inch
Drilling Method mud rotary
Problems encountered during drilling/completion hole collapsed back to
343 feet, set casing to 343' 625

Water source for drilling and completion procedures base potable water supply well

Sampling

Number, type and disposition of samples collected water samples, collected after
well development

Sample interval (ft-ft) 343', top of Ogallala Aquifer

Storage and/or preservation method(s) 4°C, shipped overnight delivery OEHL/RAS

Materials

Casing type Schedule 80 PVC Diameter 4 inch
Top of well casing (ft-AGL/BGL) 3'/343' Elevation (ft-msl) 4267.46
Depth of casing (ft) 343'
Screen type mill slot Diameter 4 inch (internal)
Slot size 0.01 inch Screen interval (ft-ft) 343-328

Type(s) of glue used to join casing None - threaded flush joint couplings
Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)
Amount of gravel pack used 4 bags
Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)¹
Lithology of gravel pack Mostly silica (94%)
Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 343 - 325
Interval of bentonite seal (ft-ft) 325 - 323
Interval of grouting (ft-ft) 323 - Land surface

Comments

Type of bentonite - Pellets (Volclay)
Type of grout - Portland Type 1 (neat cement)
¹#30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) Cannon AFB

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Well Completion Log: Sheet 2 of 2 (Development)

Well A (continued)

Development started January 7, 1985 Development ended January 7, 1985
Static level of water before _____ (ft) and after _____ (ft) development.
Measuring point (MP) description top of steel casing

MP Height 2.35 (ft) Elevation 4267.46 (ft)
Quantity of water discharged during development 5 well volumes below static level
Type, size/capacity of pump or bailer used for development air line - lift development

Depth of open hole inside well (below ground level on measuring point)
Before development 343 (ft) After development 343 (ft)

Date/Time	Discharge (GPM/Bail(s))		Field Measurements			Remarks
	Note	SWL start/End.(1)	Temperature	Conductivity	pH	
1/25/85	1320 hrs	3 gpm	18.5°	740	7.6	
	1330 hrs		18.5°	750	7.5	
	1410 hrs		18.4°	750	7.4	
	1500 hrs		18.4°	750	7.4	

NOTE: (1) Depth measurements made by Steel Tape (ST); Rope and Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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Completion Log: Sheet 1 of 2

Well No. Monitor Well B Project Cannon AFB IRP
Location Landfill No. 5 Log Recorded by T.K. Walters

Construction

Construction Started November 25, 1984 Completed November 30, 1984
Total Depth Drilled (ft) 362.3 Hole Diameter 8-inch
Drilling Method mud rotary
Problems encountered during drilling/completion none

Water source for drilling and completion procedures potable base supply well

Sampling

Number, type and disposition of samples collected water samples collected after well development

Sample interval (ft-ft) 362.3' at top of Ogallala Aquifer

Storage and/or preservation method(s) 4°C, shipped to OEHL/RAS, overnight delivery

Materials

Casing type Schedule 80 PVC Diameter 4 inch (interval)
Top of well casing (ft-AGL/BGL) 2.8/362.3' Elevation (ft-msl) 4266.04
Depth of casing (ft) 362.3
Screen type mill slotted Diameter 4 inch (internal)
Slot size 0.01 inch Screen interval (ft-ft) 362.3-347.3

Type(s) of glue used to join casing None - threaded flush joint couplings

Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)

Amount of gravel pack used 5 bags

Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)¹

Lithology of gravel pack Mostly silica (94%)

Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 362.3 - 342.3

Interval of bentonite seal (ft-ft) 342.3 - 340.3

Interval of grouting (ft-ft) 340.3 - Land Surface

Comments

Type of bentonite -- Volclay (Pellets)

Type of grout - Portland Type 1 (neat cement)

¹ #30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) Cannon AFB

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Well Completion Log: Sheet 2 of 2 (Development) Well B (continued)

Development started November 30, 1984 Development ended November 30, 1984
Static level of water before 245 (ft) and after 265.7 (ft) development
Measuring point (MP) description steel casing

MP Height 2.8 (ft) Elevation 4266.04 (ft)
Quantity of water discharged during development 5 well volumes
Type, size/capacity of pump or bailer used for developmnt air lift development

Depth of open hole inside well (below ground level on measuring point)
Before development 362.3 (ft) After development 362.3 (ft)

Date/Time	Discharge (GPM/Bail(s))		Field Measurements			Remarks
	Note	SWL start/End.(1)	Temperature	Conductivity	pH	
1/24/85	9040	3 gpm	18.1°	760	7.45	
	1000		18.1°	800	7.68	
	1120		18.1°	760	7.5	

NOTE: (1) Depth measurements made by Steel Tape (ST); Rope and Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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Completion Log: Sheet 1 of 2

Well No. Monitor Well C Project Cannon AFB IRP
Location Landfill No. 5 Log Recorded by T.K. Walters

Construction

Construction Started January 9, 1985 Completed January 11, 1985
Total Depth Drilled (ft) 362 Hole Diameter 8-inch
Drilling Method mud rotary
Problems encountered during drilling/completion none

Water source for drilling and completion procedures Base potable water well

Sampling

Number, type and disposition of samples collected water collected after well development

Sample interval (ft-ft) 362', top of Ogallala Formation

Storage and/or preservation method(s) 4°C, shipped overnight to OEHL/RAS

Materials

Casing type Schedule 80 PVC Diameter 4 inch
Top of well casing (ft-AGL/BGL) 2.96/362 Elevation (ft-msl) 4267.90
Depth of casing (ft) 362
Screen type mill slotted Diameter 4 inch (internal)
Slot size 0.01 inch Screen interval (ft-ft) 362-347

Type(s) of glue used to join casing None - threaded flush joint couplings

Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)

Amount of gravel pack used 5 bags

Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)¹

Lithology of gravel pack Mostly silica (94%)

Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 362 - 344

Interval of bentonite seal (ft-ft) 344 - 342

Interval of grouting (ft-ft) 342 - Land Surface

Comments

Type of bentonite - Pellets (Volclay)

Type of grout - Portland Type I (neat cement)

¹#30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) Cannon AFB

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Well Completion Log: Sheet 2 of 2 (Development) Well C (continued)

Development started 11 January 1985 Development ended 11 January 1985
Static level of water before 250 (ft) and after 267 (ft) development
Measuring point (MP) description top of steel casing

MP Height 2.96 (ft) Elevation 4267.90 (ft)
Quantity of water discharged during development 5 well volumes below static water level
Type, size/capacity of pump or bailer used for developmnt air lift development

Depth of open hole inside well (below ground level on measuring point)
Before development 362 (ft) After development 362 (ft)

Date/Time	Discharge (GPM/Bail(s))		Field Measurements			Remarks
	Note	SWL start/End.(1)	Temperature	Conductivity	pH	
1/24/85	1300 hrs	3 gpm	18.7°	725	7.15	
	1400 hrs		18.7°	740	7.2	
	1430 hrs		18.7°	740	7.2	

NOTE: (1) Depth measurements made by Steel Tape (ST); Rope and Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

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Completion Log: Sheet 1 of 2

Well No. Monitor Well D Project Cannon AFB IRP
Location Landfill No. 5 Log Recorded by T.K. Walters

Construction

Construction Started December 10, 1984 Completed December 16, 1984
Total Depth Drilled (ft) 356.75 Hole Diameter 8-inch
Drilling Method mud rotary
Problems encountered during drilling/completion none

Water source for drilling and completion procedures Base potable water supply well

Sampling

Number, type and disposition of samples collected water, collected after well development

Sample interval (ft-ft) 356' in top portion of Ogallala Aquifer

Storage and/or preservation method(s) 4°C, shipped overnight delivery OEHL/RAS

Materials

Casing type Schedule 80 PVC Diameter 4 inch
Top of well casing (ft-AGL/BGL) 2.67/356.75 Elevation (ft-msl) 4265.90
Depth of casing (ft) 356.75
Screen type mill slotted sch. 80 PVC Diameter 4 inch, (internal)
Slot size 0.01 inch Screen interval (ft-ft) 356.75-341.75

Type(s) of glue used to join casing None - threaded flush joint couplings

Type of gravel/sand pack used Clemtex No. 2 (8-40 mesh)

Amount of gravel pack used 5 bags

Grain size distribution of gravel pack Retained #8 (2.0%), #16 (51.2%), #20 (62.8%)¹

Lithology of gravel pack Mostly silica (94%)

Source (company and quarry/pit) Clemtex, Inc., Houston, Texas

Interval of gravel pack (ft-ft) 356.75 - 336.75

Interval of bentonite seal (ft-ft) 336.75 - 334.75

Interval of grouting (ft-ft) 334.75 - land surface

Comments

Type of bentonite - Pellets (Volclay)

Type of grout - Portland Type 1 (neat cement)

¹#30 (78.4%), #40 (91.2%), #50 (98.9%), #100 (100.0%)

Description of Security Measures

N/A

Padlock ID No. N/A Location of key(s) Cannon AFB

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Well Completion Log: Sheet 2 of 2 (Development) Well D (continued)

Development started December 16, 1984 Development ended December 16, 1984
Static level of water before 265 (ft) and after 265.2 (ft) development
Measuring point (MP) description top of steel casing
MP Height 2.67 (ft) Elevation 4265.90 (ft)
Quantity of water discharged during development 5 well volumes, below static water level
Type, size/capacity of pump or bailer used for developmnt air lift development
Depth of open hole inside well (below ground level on measuring point)
Before development 356.75 (ft) After development 356.75 (ft)

Date/Time	Discharge (GPM/Bail(s))	Note SWL start/End.(1)	Field Measurements			Remarks
			Temperature	Conductivity	pH	
1/25/85	0730	3 gpm	19.0°	720	8.25	
	0800		18.3°	725	8.37	
	0900		18.2°	720	8.10	
	0930		18.3°	720	8.20	

NOTE: (1) Depth measurements made by Steel Tape (ST); Rope and Bailer (R/B) and Electric Line (EL).
(2) Temperature in degrees celsius.
(3) Conductivity in micromhos/centimeter at field temperature.

Log of Drilling Operations
Deep Soil Boring #1A

Location Site 1A Landfill No. 1
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning February 24, 1985 and end
Feb. 24, 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	TOPSOIL; with some wood and other debris.
5-		SB-1A-1	ST	SOIL; with caliche nodules, fairly hard caliche contact, 6', caliche 6'-10', soft, white.
10-		SB-1A-2	ST	CALICHE; with silt, buff-white, caliche is 80% of sample.
15-			G	SILT; white, with calcite matrix, fine grained, some caliche nodules <1/2" diameter.
20-			G	SAND; buff-brown, silty, poorly sorted, fine-medium grained, with 25% caliche nodules, 1/2" diameter.
25-			G	SAND; buff-brown, fine-medium grained, well sorted, quartzose, subrounded.
30-			G	SAND; brown, medium grained, well sorted, quartzose, subrounded.
35-			G	SAND; brown, extremely well sorted, fine-medium grained, subrounded.
40-		SB-1A-3	ST	SAND; brown, very well sorted, with trace of calcite.
45-				

Borehole 1A was grouted from 43 1/2 ft(TD) to the surface with 7 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #1B

Location Site 1B Landfill No. 1
 Log Recorded by T.K. Walters
 Type Drill Rig and Operator Mobile B-61
 Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
 Beginning February 24, 1985 and end
Feb. 24, 1985 of drilling operation
 Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			ST	TOPSOIL; red, silty, with increase in calcite from 4'-5', caliche stringers, brown, moist, slightly sandy at 5'.
5-		SB-1B-1	ST	SAND; slightly moist, brown, very little caliche subsoil, from 8'-10' sandy.
10-		SB-1B-2	ST	CALICHE; buff-white, with sandy silt, soft, 70% caliche.
15-			G	SILT; with calcite matrix, extremely well sorted, buff-white, soft.
20-			G	SILT; fine-grained, with calcite matrix, aeolian dune sand, fast penetration.
25-			G	SILT; buff-brown, calcareous, "flour" texture, fine, very well sorted.
30-			G	SILT; sandy, pink, coarser than above, sand is red-brown, moderately sorted, subrounded, unconsolidated.
35-			G	SAND; medium grained, red-brown, moderately well sorted, unconsolidated, quartzose.
40-		SB-1B-3	ST	SAND; medium grained, well sorted, unconsolidated, rounded, with 10% lithics.
45-				
50-				
55-				

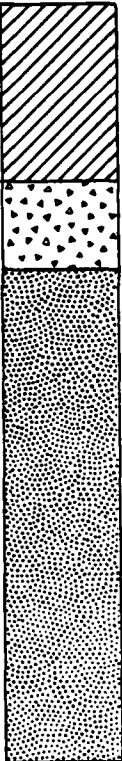
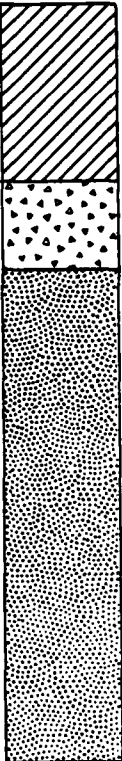
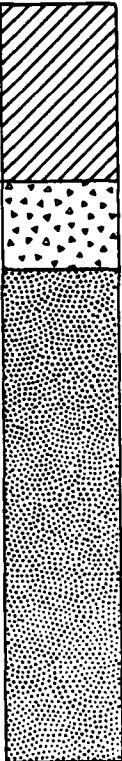
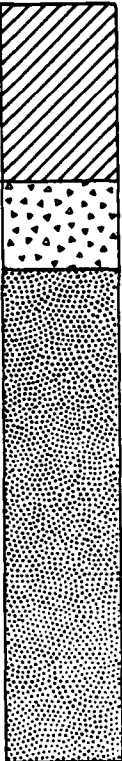
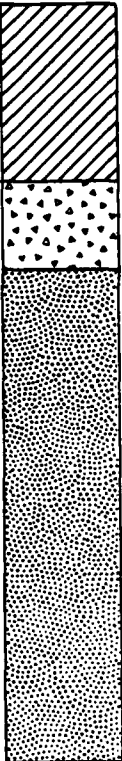
Borehole 1B was grouted from 53 1/2 ft(TD) to the surface with 8 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #1C

Location Site 1C Landfill No. 1
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning February 25, 1985 and end
Feb. 25, 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			ST	DEBRIS; with some discolored wood fragments, charcoal, disturbed topsoil.
5-		SB-1C-1	G	SUBSOIL; with some debris (wood fragments, charcoal, metal) first contact with caliche 9'.
10-		SB-1C-2	ST	CALICHE; soft, buff-white, with tan silt, fairly hard.
15-			G	SAND; with caliche, buff-brown, extremely hard zone at 15'-17'; sand medium grained with calcite cement.
20-			G	SAND; with wood fragments (from above) increase in caliche from 22 1/2'-25'.
25-			G	SAND; silty, with caliche nodules 1/2" diameter, fairly soft, unconsolidated.
30-			G	SAND; brown, medium grained, well sorted.
35-		SB-1C-3	ST	SAND; same as above.
40-				
45-				

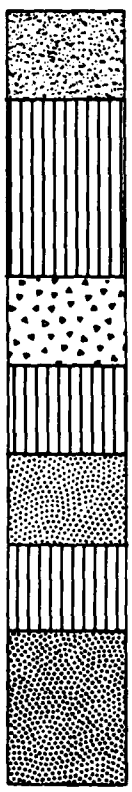
Borehole 1C was grouted from 43 1/2 ft(TD) to the surface with 7 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #1D

Location Site 1D Landfill No. 1
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning February 25, 1985 and end
Feb. 25, 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	TOPSOIL; rooty, no other debris visible with subsoil 2'-5', light brown.
5-		SB-1D-1	ST	SILT; with caliche, poorly sorted, caliche nodules 1/2" diameter, dry.
10-		SB-1D-2	ST	SILT; buff-brown, sandy, with caliche, slightly consolidated.
15-			G	CALICHE; with silty sand, buff, fine-medium grained, caliche in stringers.
20-			G	SILT; buff with calcite matrix, well sorted, fine grained, fast drilling.
25-			G	SAND; light brown, silty, fine grained, well sorted, subrounded, decrease in % caliche with depth.
30-			G	SILT; very fine, with calcite matrix, some hard streaks of cemented sand.
35-			G	SAND; red, medium grained, well sorted, unconsolidated, subrounded, quartzose.
40-		SB-1D-3	ST	SAND; red-brown, very well sorted, unconsolidated, dry, subrounded.
45-				

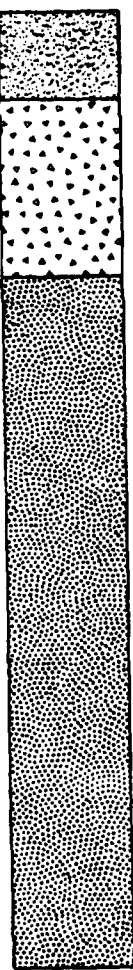
Borehole 1D was grouted from 43 1/2 ft(TD) to the surface with 7 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #1E

Location Sire 1E Landfill No. 1
 Log Recorded by T.K. Walters
 Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
 Beginning February 25, 1985 and end
Feb. 25, 1985 of drilling operation
 Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	TOPSOIL; red, rooty, no debris present, subsoil from 2'-5', some caliche from 4'-5'.
5-		SB-1E-1	ST	CALICHE; silty, buff, with chert from 8'-10', very hard, brown, banded.
10-		SB-1E-2	ST	CALICHE; with chert, chert in nodules 10'-12', silt from 12'-15' with calcite cement, soft, well sorted.
15-			G	SAND; buff-brown, silty, with calcite cement, well sorted, unconsolidated.
20-			G	SAND; cemented with calcite, buff, fine-medium grained, poorly sorted, hard.
25-			G	SAND; extremely hard, cemented with calcite, fine-medium grained.
30-			G	SAND; loosely consolidated, medium grained, with calcite matrix, caliche nodules 1/2" diameter.
35-			G	SAND; brown, unconsolidated, fine-medium grained, poorly sorted, slightly cemented.
40-			G	SAND; brown, extremely soft, unconsolidated, moderately sorted, subangular, quartzose.
45-				SAND; brown, unconsolidated, same as above.
50-		SB-1E-3	ST	SAND; brown, unconsolidated, fine-medium grained, quartzose.
55-				

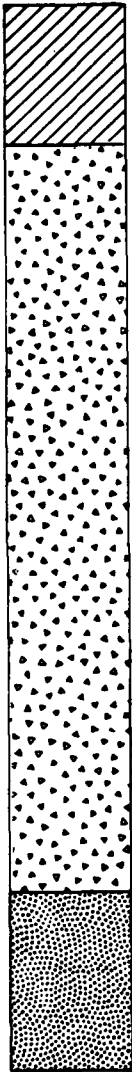
Borehole 1E was grouted from 53 1/2 ft(TD) to the surface with 8 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #2A

Location Site 2A Landfill No. 2
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 18 January 1985 and end
18 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
0-			G	CLAY; red-brown, sandy, sparse gravels.
5-			G	CLAY; red-brown, sandy, plastic changing to caliche at 7.5'.
10-		SB2A-1	ST	CALICHE; pink, fine to medium sand, subangular to subround, with abundant calcite cement.
15-		SB2A-2	ST	CALICHE; pink, fine to medium sand, subangular to subround, with abundant calcite cement.
20-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement; highly indurated.
25-			G	CALICHE; tan changing to gray at 27.5', fine sand, subangular to subround with abundant calcite cement; highly indurated.
30-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement, highly indurated.
35-			G	CALICHE; tan, fine to medium sand, subround with abundant calcite cement; less indurated.
40-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement.
45-			G	CALICHE; tan, fine to medium sand, subangular to subrounded with abundant calcite cement; soft, rapid drilling.
50-			G	SAND; pink, fine frosted quartz with some calcite cement.
55-			G	SAND; pink, fine frosted quartz grains with calcite cement - no sample recovery because of unconsolidated sediments.
60-				

Borehole 2A was grouted from 60 ft (TD) to the surface using 9 bags of Portland Type neat cement.

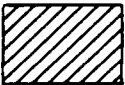












*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #2B

Location Site 2B Landfill No. 2
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 19 January 1985 and end
19 Jan 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	CLAY; red-brown, sandy, plastic; changing to caliche at 4.0', fine to medium sand with abundant calcite cement.
5-		SB2B-1	ST	CALICHE; brown to tan, sand, fine to medium with abundant calcite cement.
10-		SB2B-2	ST	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement.
15-			G	CALICHE; tan/pink, fine to medium sand, subangular to subround with abundant calcite cement, soft-rapid drilling.
20-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement; more indurated.
25-			G	CALICHE; tan, fine sand, subangular to subround with abundant calcite cement, well indurated.
30-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement.
35-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement well indurated.
40-			G	CALICHE; tan, fine to medium sand, subround with abundant calcite cement, soft-rapid drilling.
45-			G	CALICHE; tan/pink, fine to medium sand, subround with abundant calcite cement, soft-rapid drilling - changing to sand.
50-			G	SAND; pink to red, fine to medium, unconsolidated, subangular to subround, soft.
55-			G	SAND; pink to red, fine to medium grained, subangular to subround, soft-no sample because of unconsolidated nature of material.
60-				

Borehole 2B was grouted from 60 ft (TD) to the surface using 9 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring # 2C

Location Site 2C Landfill No. 2
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage
Beginning 20 January 1985 and e
20 Jan, 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
0-			G	CLAY; red-brown, sandy, somewhat plastic changing to caliche at 4.5'.
5-		SB2C-1	ST	CALICHE; pink, fine to medium sand, sub-angular to subround, with abundant calcite cement, soft.
10-		SB2C-2	ST	CALICHE; tan, fine to medium sand, subangular to subround, with abundant calcite cement.
15-			G	CALICHE; tan, fine to medium sand, subangular to subround, with abundant calcite cement, soft-rapid drilling.
20-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement, alternating hard and soft layers.
25-			G	CALICHE; tan/white fine to medium sand, sub-angular to subround, with abundant calcite cement, soft.
30-			G	CALICHE/SAND; tan, white, fine to medium sand, subround with calcite cement, soft-partially consolidated-no recovery.
35-				
40-				

Borehole 2C was grouted from 36.5 ft (TD) to the surface using 6 bags of Portland Type I neat cement.


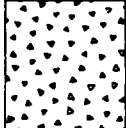
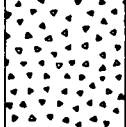
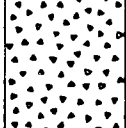
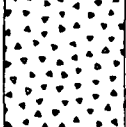
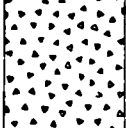
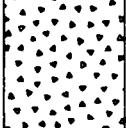
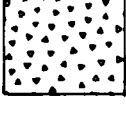


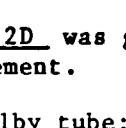
*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring # 2D

Location Site 2D Landfill No. 2
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 21 January 1985 and end
21 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	CLAY; Red-brown, sandy, plastic, changing to caliche at 4.0 feet.
5-		SB2D-1	ST	CALICHE; pink/tan, fine to medium sand, sub-angular to subround, with abundant calcite cement.
10-		SB2D-2	ST	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement, indurated.
15-			G	CALICHE; tan, fine to medium sand, subangular to subround, with abundant calcite cement, alternating hard/soft layering.
20-			G	CALICHE; tan, fine to medium sand, subround, frosted, with abundant calcite cement, well indurated.
25-			G	CALICHE; tan, fine to medium sand, subround with abundant calcite cement, well indurated.
30-			G	CALICHE; tan, fine to medium sand, subround with abundant calcite cement, soft-rapid drilling.
35-			G	CALICHE; tan, fine to medium sand, subround to round with abundant calcite cement-rapid drilling.
40-			G	CALICHE; pink, fine to medium sand, subround, with calcite cement overgrowth, rapid drilling-unconsolidated-no sample recovery.
45-			G	SAND; pink, fine to medium, aeolian, unconsolidated.
50-				
55-				

Borehole 2D was grouted from 52.5 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring # 2E

Location Site 2E Landfill No. 2
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage
Beginning 22 January 1985 and ending
22 Jan. 1985 of drilling operation.
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-2E-1	ST	CLAY; red-brown, sandy, plastic with scattered calcrete gravels changing to caliche at 4.5 feet.
5-		SB-2E-2	ST	CALICHE; pink/tan, fine to medium sand, subangular to subround with abundant calcite cement.
10-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement, well indurated.
15-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement alternating hard/soft layering.
20-			G	CALICHE; tan/white, fine to medium sand, subangular to subround, abundant calcite cement, alternating hard/soft layering.
25-			G	CALICHE; tan, fine to medium sand subangular to subround, abundant calcite cement well indurated.
30-			G	CALICHE; tan, fine to medium sand, subangular to subround, abundant calcite cement well indurated.
35-			G	CALICHE; tan, fine sand, subround with abundant calcite cement, soft-rapid drilling.
40-			G	CALICHE; tan/white, fine sand, frosted quartz with calcite cement overgrowth-rapid drilling.
45-			G	CALICHE/SAND; pink calcite cemented sand, fine to medium, rapid drilling.
50-		SB-2E-3	G	SAND; pink sand, fine to medium, calcite cement, frosted grains - no core recovery because of unconsolidated material; sample taken from cuttings.
55-				

Borehole 2E was grouted from 55 ft (TD) to the surface using 9 bags of Portland Type neat cement.

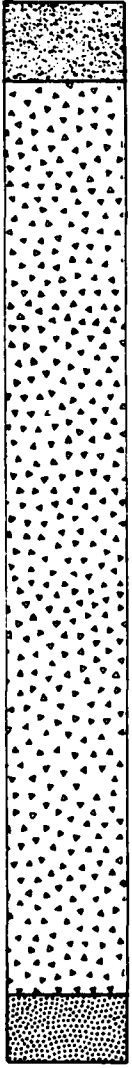
*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #SB-3A

Location Landfill #3 Borehole A
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 13 February 1985 and end
13 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-3A-1	ST	TOPSOIL; red-brown, medium sandy loam w/ minor calcite fill to 3'; bright orange fine, well sorted sand from 3'-4.5'.
5-		SB-3A-2	ST	CALICHE; light pink, fine sand with abundant calcite cement; very soft and friable.
10-			G	CALICHE; pinkish-tan, fine to medium sand w/abundant calcite cemented nodules.
15-			G	CALICHE; similar to above with more nodules.
20-			G	CALICHE; same as above.
25-			ST	CALICHE; same as above.
30-			G	SANDSTONE; light pink, fine to medium sand, well cemented w/calcite and dia- genetic quartz; very hard.
35-			ST	CALICHE; light pink, very hard calcrete.
40-			G	CALICHE; tan fine, well sorted, sand and calcite cement; soft and friable.
45-			ST	CALICHE; light pink, very hard "calcrete".
50-			G	SAND; transitional from caliche; tan, fine-medium, mod. sorted w/minor cemented nodules.
55-		SB-3A-3	SS	SAND; tan, fine-medium, moderately sorted, unconsolidated sand.
60-				

Borehole SB-3A was grouted from 59.5 ft (TD) to the surface using 8 bags of Portland
Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.


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Log of Drilling Operations

Deep Soil Boring #SB-3B

Location Landfill #3 Borehole B
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 14 February 1985 and end
14 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-3B-1	ST	TOPSOIL; Red-brown, medium loamy sand, moderately sorted and rounded to 3';
5-		SB-3B-2	ST	underlain by orange well sorted medium sand.
10-				CALICHE; Light pink, fine sand, mod. sorted with abundant calcite cement; friable.
15-			G	CALICHE; Pinkish-tan, fine sand with calcite cement and minor calcareous nodules.
20-			G	CALICHE; Similar to above, but with more abundant (25%) nodules.
25-			G	CALICHE; As above.
30-			G	CALICHE; Similar to above, but with fewer nodules.
35-			G	CALICHE; As above.
40-			G	CALICHE; As above.
45-			G	CALICHE; Similar to above, but including hard, partially silica-cemented sandstone fragments.
50-			G	CALICHE; As above.
55-		SB-3B-3	ST	CALICHE; Pinkish-tan, fine sand, moderately well sorted, with abundant calcite cement.
60-				SAND; Tan, fine to medium, moderately sorted sand; unconsolidated.

Borehole SB-3B was grouted from 58.5 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

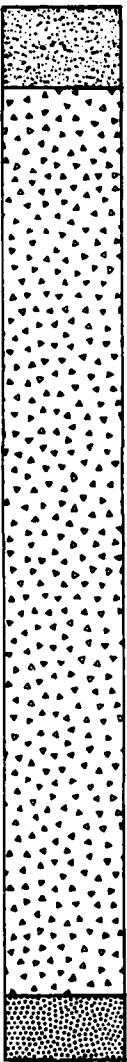
*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #SB-3C

Location Landfill #3 Borehole C
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 14 February 1985 and end
14 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-3C-1	ST	TOPSOIL; red-brown to orange, moderately sorted, medium loamy sand.
5-		SB-3C-2	ST	CALICHE; light pink, fine sand, moderately sorted, calcite cemented; friable.
10-			G	CALICHE; pinkish-tan, medium sand; mod. sorted w/abundant white calcareous nodules.
15-			G	CALICHE; similar to above, but finer grained and better sorted.
20-			G	CALICHE; pink, fine to very fine sand with abundant calcite cement and hard calcareous nodules.
25-			G	CALICHE; brown, fine sand, well sorted and rounded with about 80% hard calcareous nodules.
30-			G	CALICHE; similar to above; slightly lighter colored and fewer nodules.
35-			G	CALICHE; pinkish tan, fine to very fine sand with abundant calcite cement; very soft and friable.
40-			G	CALICHE; similar to above, with hard nodules.
45-			G	CALICHE; pink, fine to very fine sand, with some large, partially silicified nodules.
50-			G	CALICHE; similar to above but without large nodules.
55-		SB-3C-3	SS	SAND; tan, medium sand, rounded, moderately sorted, unconsolidated.
60-				

Borehole SB-3C was grouted from 59.5 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

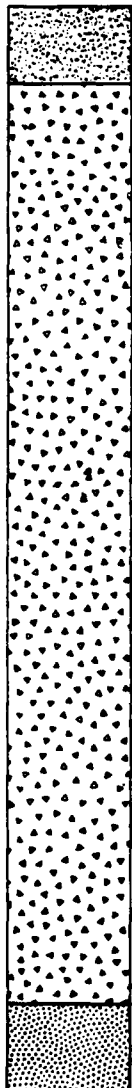
*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #SB-3D

Location Landfill #3 Borehole D
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 16 February 1985 and ending
16 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-3D-1	ST	TOPSOIL; Brown to orange-brown, medium loamy sand with pore-filling calcite in uppermost 3"; very soft from 2-4'.
5-		SB-3D-2	ST	CALICHE; Pinkish-tan, fine to medium sand, calcite-cemented; hard.
10-			G	CALICHE; As above.
15-			G	CALICHE; Similar to above; more friable.
20-			G	CALICHE; Similar to above, but with hard white calcareous nodules (20%).
25-			G	CALICHE; Brown calcareous nodules with internal laminations.
30-			G	CALICHE; As above.
35-			G	CALICHE; Pinkish-tan, fine to medium sand with calcite cement and hard calcareous nodules.
40-			G	CALICHE; Pink, fine sand with abundant calcite cement and minor calcareous nodules, friable.
45-			G	CALICHE; Light pink, very fine sand and abundant calcite cement; very soft and friable.
50-			G	CALICHE; As above.
55-		SB-3D-3	SS	SAND; Tan, medium quartz sand; mostly unconsolidated with patchy calcite cement in upper 6" of core.
60-				

Borehole SB-3D was grouted from 59.5 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #3E

Location Site 3E Landfill No. 1
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning February 23, 1985 and end
Feb. 23, 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	TOPSOIL; with debris, very disturbed, some fill dirt mixed, caliche contact 3', caliche is mixed with silt/clay.
5-		SB-3E-1	ST	CALICHE; dark brown discolored, w/gray clay, becoming thinly bedded playa lake sediments 7-10'.
10-		SB-3E-2	ST	SAND; dark brown, silty, with intermixed calcite, moist, some remnant bedding.
15-			G	SAND; dark brown, non-calcareous, moist, playa lake sediments.
20-			G	SAND; red-brown, silty, moist, non-calcareous, no caliche present.
25-			G	SAND; red-brown, silty, with clay, moist, moderately sorted, fining downward.
30-			G	SAND; silty, with silty clay, moist, plasticity, becoming more sandy with depth, out of moist zone at 32'.
35-			G	SAND; dark brown, silty, slightly calcareous, slightly moist.
40-			G	SAND; fine-medium grained, unconsolidated, w/calcite matrix, moderately sorted, hard caliche streak, 42'.
45-				SAND; silty; fine grained, unconsolidated, very well sorted, subrounded, dry.
50-			G	SILT; buff-brown, unconsolidated, very well sorted, subrounded, dry.
55-		SB-3E-3	ST	SILT; buff, unconsolidated, well sorted, subrounded.
60-				

Borehole 3E was grouted from 59 1/2 ft(TD) to the surface with 8 bags of Portland Type I neat cement.

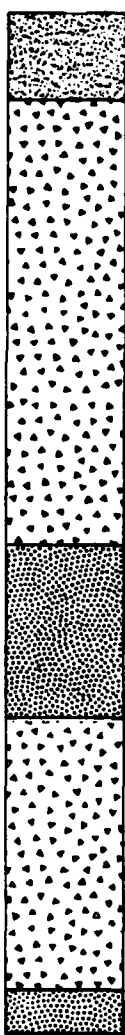
*ST = Shelby tube; SS = split spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #SB-3F

Location Landfill #3 Borehole F
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 15 February 1985 and enc
15 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-3F-1	ST	TOPSOIL; red-brown, medium loamy sand over brown to orange, fine, moderately sorted, very compact sand.
5-		SB-3F-2	ST	CALICHE; pinkish-tan, moderately sorted medium sand with calcite cement.
10-			G	CALICHE; similar to above with hard white calcareous nodules.
15-			G	CALICHE; light pink, fine sand with abundant calcite cement; very soft, and hard white calcareous nodules.
20-			G	CALICHE; same as above.
25-			G	SAND; transitional-pinkish-tan, weakly consolidated, well sorted, fine sand with minor calcite cement.
30-			G	SAND; same as above.
35-			G	CALICHE; transitional-similar to above w/ large, well rounded white calcareous nod. at 39'; calcite cement in cuttings.
40-			G	CALICHE; similar to above, but with hard partially silicified nodules.
45-			G	CALICHE; pinkish tan fine sand with abundant hard partially silicified nodules.
50-			G	SAND; tan, fine-medium sand, moderately sorted; unconsolidated.
55-		SB-3F-3	SS	SAND; same as above.
60-				

Borehole SB-3F was grouted from 57 ft (TD) to the surface using 8 bags of Portland
Type I neat cement.

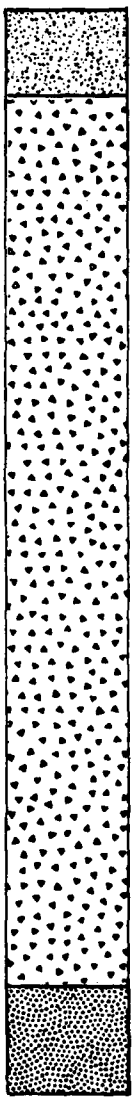
*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #SB-3G

Location Landfill #3 Borehole G
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 15 February 1985 and end
15 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-3G-1	ST	TOPSOIL; brown to red-brown, fine loamy sand with some silt and minor calcite veins.
5-		SB-3G-2	ST	CALICHE; light pink, fine sand cemented with calcite; hard and dense.
10-			G	CALICHE; pinkish-tan, fine sand with calcite cement and hard calcareous nodules.
15-			G	CALICHE; same as above.
20-			G	CALICHE; light pink, fine to very fine sand w/abundant calcite cement; very soft & friable; minor nodules.
25-			G	CALICHE; same as above.
30-			G	CALICHE; same as above.
35-			G	CALICHE; same as above.
40-			G	CALICHE; similar to above, but w/large partially silicified nodular fragments.
45-			G	CALICHE; similar to above, but with small calcareous nodules.
50-			G	CALICHE; transitional-pinkish tan, fine to medium, well sorted sand with calcite cement and minor nodules.
55-		SB-3G-3	SS	SAND; tan, medium sand, moderately sorted, well rounded, unconsolidated.
60-				

Borehole SB-3G was grouted from 59.5 ft (TD) to the surface using 7 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #3H

Location Site 3H Landfill No. 3
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage
Beginning February 22, 1985 and end
Feb 22, 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		ST-3H-1	ST	TOPSOIL; red with roots and organic matter, some surface debris, caliche and topsoil intermixed 2'-4'; caliche contact at 3'.
5-		ST-3H-2	G	CALICHE; silty, buff-white, soft, loosely consolidated with calcite, dry.
10-			ST	SAND; silty, buff-brown with calcite matrix, dry, moderately sorted.
15-			G	SILT; buff-white, "powdery", texture, very well sorted, dry.
20-			G	SAND; buff-white, silty, with caliche nodules 1/4" diameter, poorly sorted, loosely consolidated.
25-			G	SILT; with calcite cement, some caliche nodules present, well sorted, slightly consolidated.
30-			G	SAND; buff-brown, silty, fine-medium grained, poorly sorted, with cemented grains, coarser than above.
35-			G	SAND; light brown, fine-coarse, coarser than above, decrease in calcite, color change 37'.
40-			G	SAND; brown, fine-medium grained, oxidized moderately sorted, subrounded.
45-			G	CALICHE; with sand, cemented, fine-medium grained, brown, poorly sorted, nodules 1" diameter.
50-			G	SAND; fine grained, brown, well sorted, unconsolidated, no caliche present, calcite matrix.
55-		ST-3H-3	SS	SAND; fine-medium brown, unconsolidated, poorly sorted, 31 counts/6".
60-				

Borehole 3H was grouted from 58 ft(TD) to the surface with 7 bags of Type I neat cement.

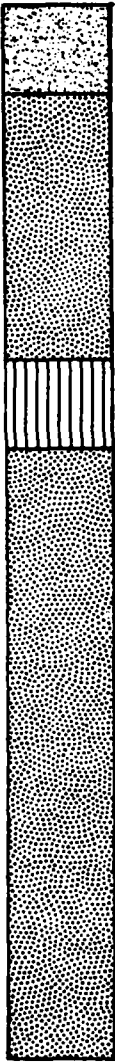
*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #3I

cation Site 3I Landfill No. 3
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning February 22, 1985 and end
Feb 22, 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
0-		SB-3I-1	ST	TOPSOIL; with caliche, 1.5'2.0', moist, interbedded silt, 4'-5'.
5-		SB-3I-2	ST	SAND; light brown, dry, some caliche, fine-medium grained, well sorted, becoming more silty with depth.
10-			G	SAND; dark brown, silty, moist.
15-			G	SAND; light gray brown, silty, caliche, nodules, dry.
20-			G	SILT; buff-white, calcite matrix, fine grained, possible dune.
5-			G	SAND; buff-white silty, stringers of well indurated sand, caliche nodules.
30-			G	SAND; light brown, silty, moderately sorted, subrounded.
35-			G	SAND; light brown, silty, nodules (10%), medium grained, well sorted, subrounded.
40-			G	SAND; brown, medium grained, poorly sorted, no caliche present, moist.
45-			G	SAND; brown, fine grained, moderately sorted, with 5% caliche, soft.
50-			G	SAND; silty, brown, caliche nodules, caliche 5%.
55-		SB-3I-3	SS	SAND; brown, fine grained, well sorted decrease in caliche, blow counts; 33/6", 40/6", 57/6", 90/6".
60-				

hole 3I was grouted from 59 1/2 ft(TD) to the surface with 7 bags of Type I neat cement.

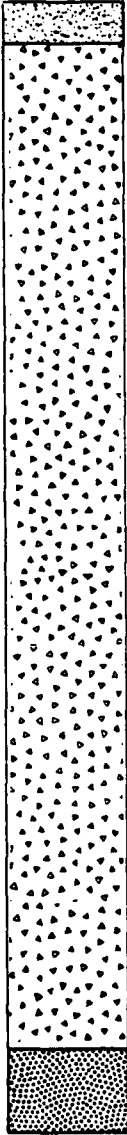
*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #SB-4A

Location Landfill #4 Borehole A
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 8 February 1985 and ending
8 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-4A-1	ST	TOPSOIL; brown, fine to medium, loamy sand; moderately sorted.
5-		SB-4A-2	ST	CALICHE; pinkish tan, fine, poorly sorted sand with abundant well-cemented white calcareous nodules.
10-			G	CALICHE; pinkish tan, poorly sorted sand with 20% well-cemented, white calcareous nodules.
15			G	CALICHE; pinkish tan, fine to medium moderately sorted sand with 25% well-cemented white calcareous nodules.
20-			G	CALICHE; light pink, very fine sand, moderately sorted with minor well-cemented white calcareous nodules.
25-			G	CALICHE; same as above.
30-			G	CALICHE; same as above.
35-			G	SANDSTONE; light pink, with calcareous nodules; fine to medium, angular to sub-rounded sand; moderately sorted, very hard.
40-			G	CALICHE; pinkish tan, fine sand, moderately sorted with minor well-cemented white calcareous nodules.
45-			G	CALICHE; same as above
50-			G	CALICHE; same as above.
55-			G	SAND; transitional from caliche, pinkish tan fine to med. grained, subrounded, mod. well sorted with minor white calcareous nodules.
60-		SB-4A-3	ST	SAND; tan, medium grained, subrounded, well sorted, unconsolidated.

Borehole SB-4A was grouted from 63 ft (TD) to the surface using 7.5 bags of Portland Type I neat cement.

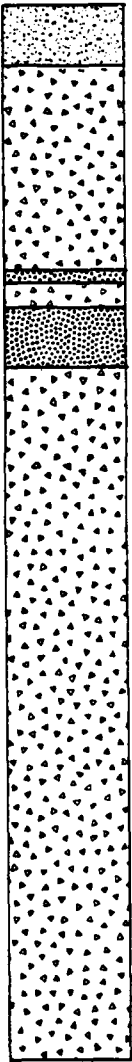
*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #SB-4B

Location Landfill #4 Borehole B
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 8 February 1985 and end
8 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-4B-1	ST	TOPSOIL; red-brown, medium loamy sand, moderately sorted.
5-		SB-4B-2	ST	CALICHE; pinkish tan, fine calcite cemented sand, friable with abundant calcite veins.
10-			G	SAND; pinkish tan, medium grained, well sorted, weakly cemented, with hard well-cemented white nodules.
15-			G	SAND; brown, medium grained, moderately sorted with abundant friable to well cemented calcareous nodules.
20-			G	CALICHE; pinkish-tan, fine, moderately sorted sand with 25% white calcareous nodules.
25-			G	CALICHE; light pink, very fine, well sorted sand with 20% well-cemented, white calcareous nodules.
30-			G	CALICHE; light gray, very fine sand to silt, well sorted, calcareous, very soft.
35-			G	CALICHE; pinkish tan, fine, moderately sorted sand with 20% white calcareous nodules.
40-			G	CALICHE; similar to above with more abundant calcareous nodules.
45-			G	CALICHE; same as above.
50-			G	CALICHE; same as above.
55-			G	CALICHE; same as above - no recovery.
60-				

Borehole SB-4B was grouted from 59.5 ft (TD) to the surface using 7.5 bags of Portland Type I neat cement.

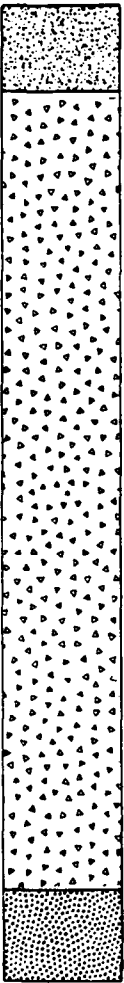
*ST = Shelby tube; SS = split-spoon; G = grab.

RADIAN
CORPORATION

Log of Drilling Operations
Deep Soil Boring #SB-4C

Location Landfill #4 Borehole C
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 9 February 1985 and end
9 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-4C-1	ST	TOPSOIL; dark red-brown, medium, sandy loam with minor caliche pore-fill.
5-		SB-4C-2	ST	CALICHE; light pink, fine sand, well cemented with calcite.
10-			G	CALICHE; pinkish tan, fine sand, moderately sorted, subrounded, abundant cement and minor calcareous nodules.
15-			G	CALICHE; pink, fine-very fine, sorted, sand w/abundant calcite cement, minor well-cemented white calcareous nodules.
20-			G	CALICHE; light pink, very fine sand w/ abundant calcite cement and minor white calcareous nodules.
25-			G	CALICHE; similar to above; slightly darker colored.
30-			G	CALICHE; same as above.
35-			G	CALICHE; similar to above, with some white, hard siliceous nodules.
40-			G	CALICHE; similar to above, lighter pink colored.
45-			G	CALICHE; similar to above, but with minor calcareous nodules.
50-			ST	SAND; tan, medium, moderately sorted quartz sand, unconsolidated.
55-		SB-4C-3		

Borehole SB-4C was grouted from 54 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

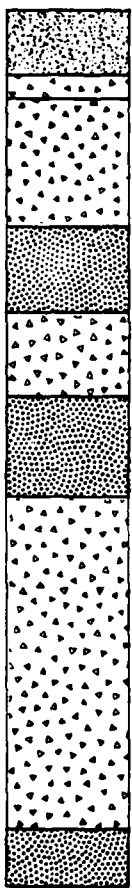
*ST = Shelby tube; SS = split-spoon; G = grab.

RADIAN
CORPORATION

Log of Drilling Operations
Deep Soil Boring #SB-4D

Location Landfill #4 Borehole D
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 11 February 1985 and end
11 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-4D-1	ST	TOPSOIL; red-brown, poorly sorted loamy sand with caliche pore fill.
5-			G	CALICHE; (from 3'-4.5') is recent deposit.
10-			G	FILL; (from 4.5'-12.5') construction and/or domestic type waste (wood, paper, metal scrap) mixed with soil.
15-		SB-4D-2	ST	SAND; red-brown, medium, moderately sorted sand, weakly consolidated.
20-			G	CALICHE; pinkish-tan fine sand with abundant calcite cement.
25-		SB-4D-3	ST	SAND; red-brown, medium sand, mostly unconsolidated with minor calcareous nodules.
30-			G	CALICHE; light pink fine sand, well cemented; hard.
35-			G	CALICHE; pink-tan, fine sand, moderately sorted, weakly consolidated, minor calcareous nodules.
40-			G	CALICHE; same as above.
45-			ST	SAND; tan, fine to medium sand with minor nodules; unconsolidated to weakly cemented in patches.
50-		SB-4D-4		

Borehole SB-4D was grouted from 49 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

*ST = Shelby tuby; SS = split-spoon; G = grab.

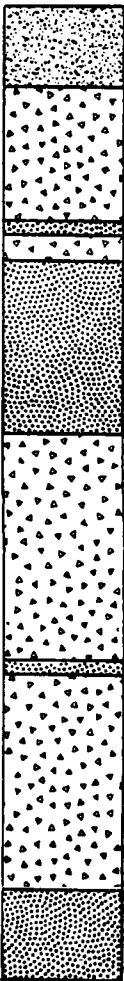
Note: This borehole was placed into the landfill trench.

RADIAN
CORPORATION

Log of Drilling Operations
Deep Soil Boring #SB-4E

Location Landfill #4 Borehole E
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 11 February 1985 and end
11 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-4E-1	ST	TOPSOIL; red-brown, medium loamy sand with minor calcite fill.
5-		SB-4E-2	ST	CALICHE; pinkish-tan, fine sand with abundant calcite veins, above light pink caliche zone.
10-			G	SAND; tan, fine to medium, moderately sorted sand with minor calcareous nodules.
15-			G	SAND; weakly cemented sand, similar to above.
20-			G	CALICHE; light pink, fine sand; well cemented, partially silicified, very hard.
25-			G	CALICHE; tan, poorly-sorted sand; well sorted silt; weakly cemented and with numerous calcite veins.
30-			G	CALICHE; light pink, very fine sand with abundant calcite cement and some white cemented nodules; very soft.
35-			G	CALICHE; as above, interlayered with hard, partially silicified zones.
40-			G	CALICHE; similar to above with fewer cemented nodules.
45-			G	CALICHE; same as above.
50-		SB-4E-3	ST	SAND; tan, medium moderately sorted quartz sand, unconsolidated.
55-				

Borehole SB-4E was grouted from 54 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

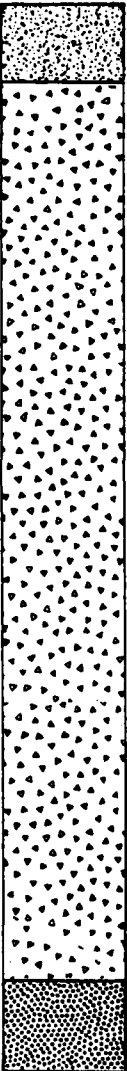
*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #SB-4F

Location Landfill #4 Borehole F
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 9 February 1985 and end
9 February 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-4F-1	ST	TOPSOIL; red-brown, medium loamy sand; moderately sorted.
5-		SB-4F-2	ST	CALICHE; pinkish-tan, fine to medium sand, moderately sorted, friable with abundant well cemented nodules.
10-			G	CALICHE; tan, fine to very fine sand with abundant calcite cement, well sorted/rounded, soft and very friable.
15-			G	CALICHE; same as above.
20-			G	CALICHE; similar to above but with 10% large (up to 3 cm) well cemented white subangular calcareous nodules.
25-			G	CALICHE; same as above.
30-			G	CALICHE; similar to above; slightly lighter colored.
35-			G	CALICHE; same as above.
40-			G	CALICHE; light pink, very fine, well-sorted sand w/abundant calcite cement
45-			G	minor white cemented nodules.
50-			G	CALICHE; same as above.
55-		SB-4F-3	G	SAND; transitional from caliche; pinkish tan, fine to medium grained, subrounded, moderately sorted, calcrete nodules.
60-			SS	SAND; tan, fine to medium, moderately sorted quartz sand, unconsolidated.

Borehole SB-4F was grouted from 60.5 ft (TD) to the surface using 6 bags of Portland Type I neat cement.

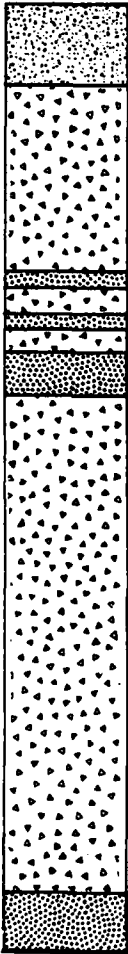
*ST = Shelby tube; SS = split-spoon; G = grab.

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CORPORATION

Log of Drilling Operations
Deep Soil Boring #SB-4G

Location Landfill #4 Borehole G
Log Recorded by D. Richmann
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB - Phase II Stage I
Beginning 10 February 1985 and end
10 February 1985 of drilling operation.
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-4G-1	ST	TOPSOIL; red-brown, medium loamy sand with minor fines.
5-		SB-4G-2	ST	CALICHE; pink, fine sand with calcite cement; friable.
10-			G	SAND; orange-brown, unconsolidated sand; fine-grained, well sorted with trace small nodules in caliche.
15-			G	SAND; same as above.
20-			G	CALICHE; light pink, fine to very fine, moderately sorted w/abundant calcareous cement and 20% calcareous nodules.
25-			G	CALICHE; same as above.
30-			G	CALICHE; same as above.
35-			G	CALICHE; similar to above, but with no large calcareous nodules.
40-			G	CALICHE; similar to above, but w/very hard, partially silicified fragments.
45-			G	CALICHE; as above, but with fewer cemented nodules.
50-		SB-4G-3	ST	SAND; tan, fine to medium, well sorted quartz sand; unconsolidated.
55-				

Borehole SB-4G was grouted from 53 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

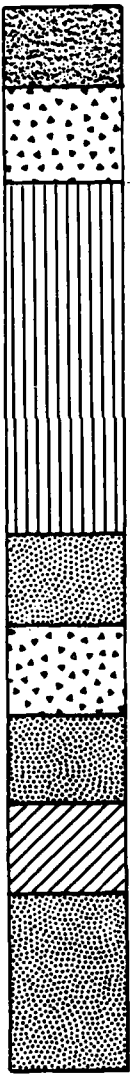
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #A

Page 1 of 6

Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary - Winnek, Inc. - B Holland

Project Cannon AFB-Phase II Stage I
Beginning 4 Jan. 1985 and end
7 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
0-			G	TOPSOIL; red-brown, fair amount organic matter, caliche contact, 4'.
5-			G	CALICHE; light tan with buff silt.
10-			G	SILT; sandy light brown, with white caliche clasts.
15-			G	SILT; interbedded with caliche, some fine sand 22-25'.
20-			G	SILT; sandy with hard white caliche interbedded.
25-			G	SILT; sandy with hard white caliche interbedded.
30-			G	SAND; silty with caliche buff brown.
35-			G	CALICHE; hard, white, nodular with buff-brown silty sand.
40-			G	SAND; silty, light brown, cemented with calcite, caliche nodules in lower portion.
45-			G	SILT; sandy, unconsolidated, poorly sorted, fine-medium grained with black lithic fragments.
50-			G	SAND; silty, fine-medium grained, unconsolidated, angular, with caliche fragments.
55-			G	SAND; dark brown, poorly cemented, poorly sorted, with clear quartz (angular).
60-				

(Monitor Well A was grouted from 325 ft to the surface with 8 yds.3 of Portland
Type I neat cement.

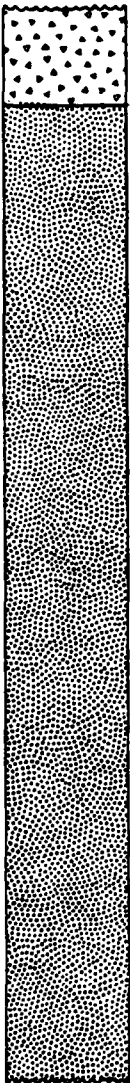
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #A

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Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary - Winnek, Inc. - B Holland

Project Cannon AFB-Phase II Stage I
Beginning 4 Jan. 1985 and end
7 Jan 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
60-			G	CALICHE; buff white and silt, extremely hard, 2' sand, cemented, medium grained.
65-			G	SAND; red-brown, unconsolidated, fine-medium grained, poorly sorted.
70-			G	SAND; light brown, unconsolidated, fine-medium, sorted, coarser than above.
75-			G	SAND; tan-brown, unconsolidated, medium grained, quartzose, coarser than above unit, subrounded grains.
80-			G	SAND; fine-medium grained, poorly sorted, unconsolidated with 6' calcite cemented layer.
85-			G	SAND; fine-medium grained, poorly sorted, increase in calcite cement.
90-			G	SAND; fine-medium grained, poorly sorted, coarser than above, calcite cement about 10%.
95-			G	SAND; medium grained, moderately sorted, quartzose, grains sub-rounded, decrease in calcite.
100-			G	SAND; fine-medium poorly sorted, semi-consolidated, calcite cement 50%, coarser than above.
105-			G	SAND; medium-coarse grained, unconsolidated subangular grains.
110-			G	SAND; same as above.
115			G	SAND; same as above.
120-				

Monitor Well A was grouted from 325 ft to the surface with 8 yds.³ of Portland Type I neat cement.

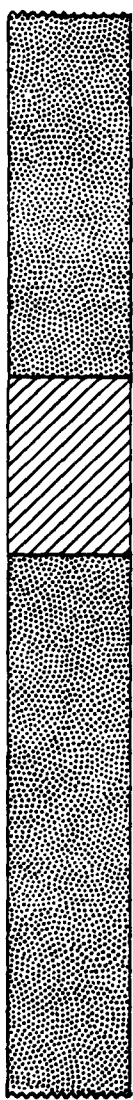
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #A

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Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary - Winnek, Inc. - B Holland

Project Cannon AFB-Phase II Stage I
Beginning 4 Jan. 1985 and end
7 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
120-			G	SAND; fine-medium grained, unconsolidated, well sorted, subrounded, quartzose.
125-			G	SAND; fine-grained, well sorted, unconsolidated, subrounded, with 5% caliche.
130-			G	SAND; fine-medium grained, well sorted, unconsolidated, subrounded, 5% caliche nodules.
135-			G	SAND; fine grained, very well sorted, unconsolidated, subrounded, 5% lithic fragments.
140-			G	SILT; fine, well sorted, much finer than above unit, unconsolidated.
145-			G	SILT; fine grained, very well sorted, quartzose, with 5% lithic fragments, subrounded.
150-			G	SAND; fine grained, very well sorted, subrounded, quartzose, clear, 5% lithics, drilling slightly slower.
155-			G	SAND; fine grained, silty, with 90% clear quartz, subrounded, 10% lithics.
160-			G	SAND; silty, fine grained, moderately well sorted, subrounded, quartzose.
165-			G	SAND; fine-medium grained, slightly cemented with calcite, caliche nodules 10%.
170-			G	SAND; loosely consolidated, by calcite, fine-medium grained, moderately sorted, caliche 10%.
175-			G	SAND; slightly cemented, by calcite, and caliche nodules (25%), sand is fine-medium, subrounded.
180-				

Monitor Well A was grouted from 325 ft to the surface with 8 yds.3 of Portland Type I neat cement.

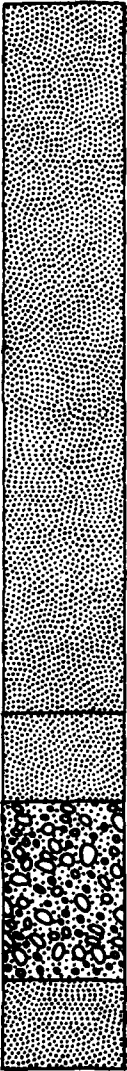
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #A

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Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary - Winnek, Inc. - B Holland

Project Cannon AFB-Phase II Stage I
Beginning 4 Jan. 1985 and end
7 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
180-			G	SAND; slightly cemented, fine-medium grained, calcite 50%.
185-			G	SAND; silty, brown, poorly sorted, slightly cemented, fine-medium grained.
190-			G	SAND; unconsolidated, fine-medium grained, subrounded, poorly sorted, 10% lithics.
195-			G	SAND; coarse, and pea gravel, angular, with reworked clay and silt (Cretaceous), unconsolidated, lithics-clay 30%.
200-			G	SAND; tan, fine-medium grained, poorly sorted, angular, with 10% lithic fragments.
205-			G	SAND; tan, fine-medium grained, subangular, with abundant iron staining on quartz grains, lithics 5%, unconsolidated.
210-			G	SAND; tan, medium-coarse, subangular, with reworked shale and silt, poorly sorted, unconsolidated.
215-			G	SAND; olive-brown, 50% green-brown silt and shale, angular quartz, fine-medium grained, poorly sorted.
220-			G	SAND AND SHALE; olive brown, sand medium grained, shale green-brown, with red clay clasts.
225-			G	GRAVEL; unconsolidated, with shale, silt, lithic fragments, unsorted conglomerate.
230-			G	SAND AND GRAVEL; sand cemented, by calcite, gravel angular, loosely consolidated.
235-			G	SAND; with minor gravel, sand fine-medium grained, loosely cemented, poorly sorted.
240-				

Monitor Well A was grouted from 325 ft to the surface with 8 yds.³ of Portlan. Type I neat cement.

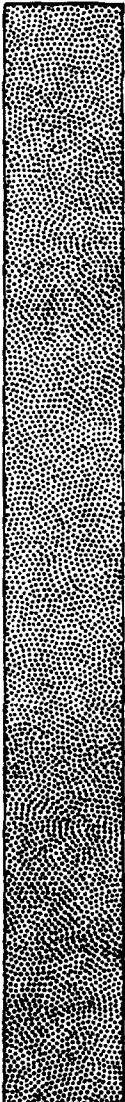
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #A

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Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary - Winnek, Inc. - B Holland

Project Cannon AFB-Phase II Stage I
Beginning 4 Jan. 1985 and end
7 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
240-			G	SAND; tan, medium-coarse grained, with 15% gravel, (may be coming in from gravel zone above).
245-			G	SAND; tan, fine-medium grained, poorly sorted, with calcite matrix, slightly silty, 10% lithics.
250-			G	SAND; brown, fine-coarse, unconsolidated, angular, with 15% lithics also angular, clay matrix 20%.
255-			G	SAND; brown, fine grained, with calcite cement, unconsolidated, poorly sorted with coarse sand-size lithic fragments 10%.
260-			G	SAND; brown, fine-medium grained, loosely consolidated with calcite cement, coarse lithics 20%, angular.
265-			G	SAND; brown, 95% quartz, fine-medium grained, absence of coarse lithic fragments, "beach sand" texture.
270-			G	SAND; brown, 95% quartz, rounded, medium grained, well sorted, lithics also rounded and sorted.
275-			G	SAND; brown, medium grained, subrounded, same as above unit with 10% lithics.
280-			G	SAND; brown, medium-coarse, subangular, poorly sorted, unconsolidated, lithics 10-15% subangular, out of "clean sand."
285-			G	SAND; tan, fine-medium grained, moderately well sorted, subrounded, calcite 10%, lithics 10%.
290-			G	SAND; tan, fine-medium, well sorted, subrounded, "clean" with 10% lithics, also fine-medium grained.
295-			G	SAND; tan, fine-medium grained, well sorted, rounded with 10% black lithic fragments, no matrix.
300-				

Monitor Well A was grouted from 325 ft to the surface with 8 yds.³ of Portland Type I neat cement.

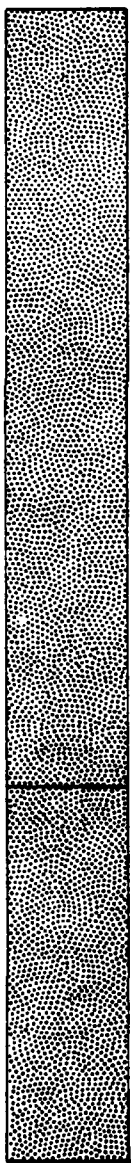
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #A

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Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary - Winnek, Inc. - B Holland

Project Cannon AFB-Phase II Stage I
Beginning 4 Jan. 1985 and end
7 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
300-			G	SAND; tan to brown, fine-medium grained, poorly sorted, with 10% coarse sand fragments, subrounded.
305-			G	SAND; brown, fine-coarse, poorly sorted, with 15% lithics, also coarse, subrounded, unconsolidated.
310-			G	SAND; with gravel, olive brown, sand is fine-medium grained, poorly sorted, subrounded, gravel coarse.
315-			G	SAND; fine-coarse, slightly cemented to larger lithic fragments, sand is subrounded.
320-			G	SAND; tan, fine-medium grained, loosely cemented, subrounded, calcite 10%.
325-			G	SAND; sand and gravel conglomerate, cemented by calcite, coarse texture, w/grey shale and reworked red silt, well indurated.
330-			G	SAND; cemented, with 10% gravel, buff-brown, iron stained, conglomerate, calcite matrix, lithics (red plagioclase, volcanics)
335-			G	SAND; medium-coarse, loosely consolidated, lithics 25%, coarse grained, out of confining zone at 339'.
340-			G	SAND; fine-coarse, unconsolidated, with sub-angular quartz 342-343' sand and gravel conglomerate; 343-345' sand unconsolidated.
345-			G	SAND; loosely consolidated, fine-medium grain, moderately sorted, subrounded lithics 5-15%, water changed to dark brown at 350'.
350-			G	SAND; fine-medium grained, poorly sorted, subrounded with 10% lithic clasts.
355-			G	SAND; medium grained, loosely consolidated subangular, subrounded with 10% lithic fragments.
360-			G	SAND; fine-coarse, poorly sorted, angular, with 30% lithic fragments.
365-				

Monitor Well A was grouted from 325 ft to the surface with 8 yds.³ of Portland Type I neat cement.

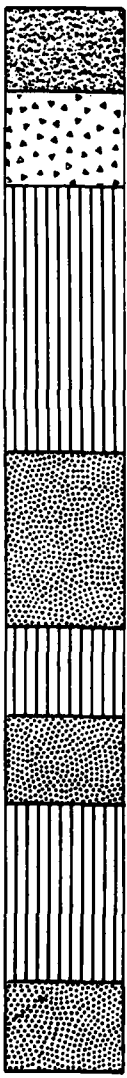
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #B

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Location Site 5B Landfill No. 5
Log Recorded by T.K. Walters/W. Boettner
Type Drill Rig and Operator Failing 1500
Air/mud Rotary-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 25 November 1984 and end
30 Nov. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
0-			G	TOPSOIL; dark brown, loamy fine sand slightly moist caliche at 4.5'.
5-			G	CALICHE; extremely hard, white, sharp upper contact increase in sand 9-10'.
10-			G	SILT; sandy, pink, poorly sorted, slightly moist, calcareous.
15-			G	SILT; buff cemented by calcite, hard, slightly sandy.
20-			G	SILT; buff-brown, cemented with calcite.
25-			G	SAND; red-brown, fine grain, moderately sorted, slightly consolidated.
30-			G	SAND; silty, buff-brown, fine-medium, well sorted, subangular, calcite cement.
35-			G	SILT; very fine with calcite matrix, unconsolidated, well sorted.
40-			G	SAND; fine-medium grained, oxidized with 6" caliche stringers.
45-			G	SILT; sandy buff, well sorted, unconsolidated.
50-			G	SILT; sandy, cemented, with hard 6" layers of caliche.
55-			G	SAND; silty, brown, grading to red oxidized sand, medium grained, moderately sorted.
60-				

Monitor Well B was grouted from 344 ft to the surface with 7 yds.3 of Portland
Type I neat cement.

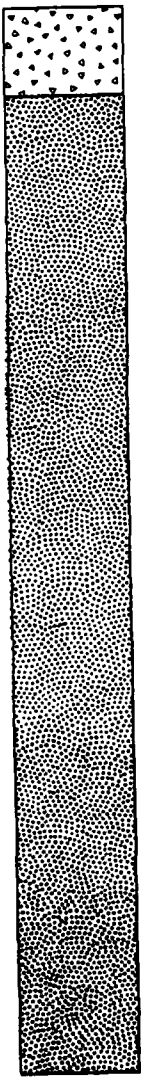
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #B

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Location Site 5B Landfill No. 5
Log Recorded by T.K. Walters/W. Boettner
Type Drill Rig and Operator Failing 1500
Air/mud Rotary-Winneke, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 25 November 1985 and end
30 Nov. 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
60-			G	CALICHE; buff-white, and silt, extremely hard, 2' sand, cemented, medium grained.
65-			G	SAND; red-brown, unconsolidated, fine-medium grained, poorly sorted.
70-			G	SAND: light brown, unconsolidated, moderately sorted, coarser than above.
75-			G	SAND; light brown, unconsolidated, moderately sorted, coarser than above.
80-			G	SAND; tan-brown, unconsolidated, medium grained, quartzose, coarser than above unit, sub-rounded grains.
85-			G	SAND; fine-medium grained, poorly sorted, unconsolidated with 6" calcite cemented layer.
90-			G	SAND; fine-medium grained, increase in calcite cement.
95-			G	SAND; fine-medium grained, poorly sorted, coarser than above, calcite cement about 10%.
100-			G	SAND; medium grained, moderately sorted, quartzose, grains sub-rounded, decrease in calcite.
105-			G	SAND; fine-medium, poorly sorted, semi-consolidated, calcite cement 50%, coarser than above.
110-			G	SAND; medium-coarse grained, unconsolidated subangular grains.
115-			G	SAND; same as above.
120-			G	SAND; same as above.

Monitor Well B was grouted from 344 ft to the surface with 7 yds.3 of Portland Type I neat cement.

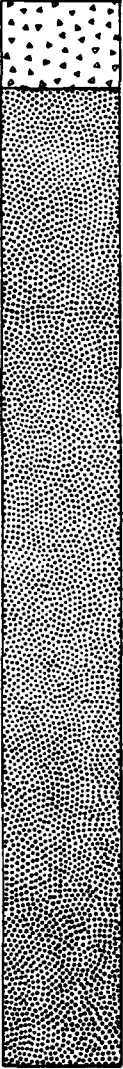
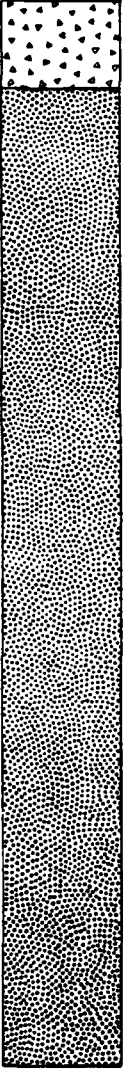
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #B

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Location Site 5B Landfill No. 5
Log Recorded by T.K. Walters/W. Boettner
Type Drill Rig and Operator Failing 1500
Air/mud Rotary-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 25 November 1984 and end
Nov. 30 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
120-			G	CALICHE; medium-coarse, cemented with calcite moderately sorted, subangular.
125-			G	SAND; same as above.
130-			G	SAND; brown, fine-medium grained, poorly sorted, cemented, 10% lithic fragments.
135			G	SAND; same as above.
140-			G	SAND; slightly cemented, fine-medium grain, calcite 25%.
145-			G	SAND; medium grained, moderately sorted, with 10% lithic fragments.
150-			G	SAND; silty, fine-medium grained with 10% clay.
155-			G	SAND; fine-medium grained, well sorted, decrease in clay.
160-			G	SAND; medium grained, angular, poorly sorted.
165-			G	SAND; brown, fine-medium grained, slightly cemented.
170-			G	SAND; fine-medium grained, moderately sorted, subrounded, lithics 10%.
175-			G	SAND; buff-brown, fine-medium grained, slightly cemented with calcite, calcite nodules 10-15%.
180-				

Monitor Well B was grouted from 344 ft to the surface with 7 yds.3 of Portland Type I neat cement.

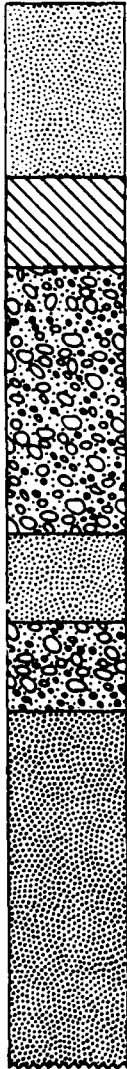
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #B

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Location Site 5B Landfill No. 5
Log Recorded by T.K. Walters/W. Boettner
Type Drill Rig and Operator Failing 1500
Air/mud Rotary-Winneke, Inc.-R Holland

Project Cannon AFB-Phase II Stage I
Beginning 25 November 1984 and end
30 Nov. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
180-			G	SAND; fine-medium grained, moderately sorted, subrounded, unconsolidated.
185-			G	SAND; red-brown, extremely hard, cemented, silt light brown clasts.
190-			G	CLAY; silty, much finer than above, poor plasticity, dark brown.
195-			G	SAND AND GRAVEL; coarse, cemented, poorly sorted, lightly calcareous, subangular, lithic 25%.
200-			G	GRAVEL; pebble size, angular, unconsolidated chert fragments, and other lithics 35%.
205-			G	GRAVEL; cobble size, high energy, angular-subrounded, slightly cemented by calcite, loosely consolidated, with lithic fragments.
210-			G	SAND; coarse grain with fine silty clay matrix, poorly sorted.
215-			G	SAND AND GRAVEL; poorly sorted, unconsolidated, subrounded, chert fragments, dull grey.
220-			G	SAND; with minor gravel, silty brown, poorly sorted, unconsolidated-semi cemented.
225-			G	SAND; medium-coarse grain, unconsolidated, poorly sorted.
230-			G	SAND; medium-coarse grain, unconsolidated, light brown, fairly well sorted.
235-			G	SAND; light brown, medium-coarse grain, subrounded, moderately sorted, slightly calcareous.
240-				

Monitor Well B was grouted from 344 ft to the surface with 7 yds.³ of Portland Type I neat cement.

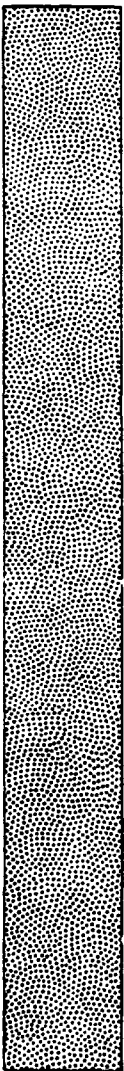
ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #B

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Location Site 5B Landfill No. 5
Log Recorded by T.K. Walters/W. Boettner
Type Drill Rig and Operator Failing 1500
Air/mud Rotary-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 25 November 1984 and end
30 Nov. 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
240-			G	SAND; silty with clay matrix, calcite nodules 30%, much more clay than above unit.
245-			G	SAND; tan-brown, fine-medium grain, moderately well sorted, subangular, quartzose.
250-			G	SAND; same as above.
255-				
260-			G	SAND; buff, cemented with calcite, silty, fine grain, poorly sorted, semi-consolidated.
265-			G	SAND; light-brown, fine-medium grain, poorly sorted, angular, with calcite nodules, clay stringers.
270-			G	SAND; brown, fine-medium grain, unconsolidated with clay stringers.
275-			G	SAND; medium-coarse grain, moderately sorted, quartzose, sub-rounded.
280-			G	SAND; same as above unit.
285-			G	SAND; medium grained, subangular, moderately sorted.
290-			G	SAND; medium grain, subangular quartz, moderately sorted.
295-			G	SAND; fine grained, with clay matrix, quartzose, subangular.
300-			G	SAND; fine-coarse, poorly sorted, unconsolidated, subangular.

Monitor Well B was grouted from 344 ft to the surface with 7 yds.3 of Portland
Type I neat cement.

ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #B

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Location Site 5B Landfill No.5

Log Recorded by T.K. Walters/W. Boettner

Type Drill Rig and Operator Failing 1500


Air/mud Rotary-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I

Beginning 25 November 1984 and end

30 Nov. 1985 of drilling operation

Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
300-			G	SAND; fine-medium, cemented, brown, drilling slow, bit skating occasionally.
305-			G	SAND; fine-medium, mostly quartz, plagioclase and shale.
310-			G	SAND; medium grained with minor lithic fragments.
315-			G	SAND; same as above unit.
320-			G	SAND; same as above unit.
325-			G	SAND; pebbles and chips of larger angular gravel, hard drilling.
330-			G	SAND AND SILT; minor gravel, caliche (calcrete?).
335-			G	SAND; with gravel, calcrete cement, resembling caliche, no water.
340-			G	SAND AND GRAVEL; angular, hard drilling.
345-			G	SAND; with gravel, drilling much faster.
350-			G	GRAVEL; hard cemented, quartzose, with olivine, lithic fragments, shale and some calcite matrix.
355-			G	GRAVEL; hard, cemented, same as above unit.
360-			G	GRAVEL; hard cemented, same as above unit.
365-				

Monitor Well B was grouted from 344 ft to the surface with 7 yds.3 of Portland Type I neat cement.

ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #C

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Location Site 5, Landfill No. 5, Cannon AFB
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/Mud Rotary Rig-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 9 Jan. 1985 and end
10 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	TOPSOIL; dark red, loam.
5-			G	CALICHE; hard, contact at 6'.
10-			G	CALICHE; with silt, buff - slightly cemented.
15-			G	SILT; buff, with caliche, silt is cemented, hard chert streak 18'-19'.
20-			G	SILT; brown, slight consolidated, caliche nodules.
25-			G	SILT; buff, fine grained cemented with calcite, chert pebbles 5%.
30-			G	SILT; buff white, slightly cemented with clay, caliche nodules 5%.
35-			G	SILT; with caliche, cemented, fine grained.
40-			G	SILT; sandy, brown with clay, 10% caliche, loosely consolidated.
45-			G	SILT; sandy, light brown, loosely consolidated.
50-			G	SAND; silty, poorly sorted, cemented by calcite, caliche nodules present.
55-			G	SAND; silty, with caliche nodules, sand portion poorly sorted, quartzose.
60-				

Monitor Well C was grouted from 344 ft to the surface with 7 1/2 yds.³ of Portland Type I neat cement.

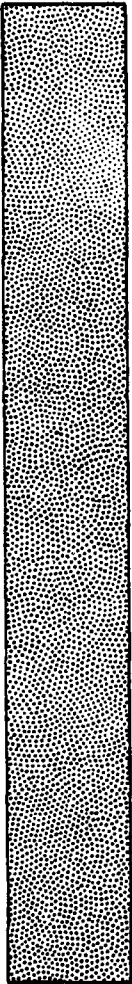
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #C

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Location Site 5, Landfill No. 5, Cannon AFB
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/Mud Rotary Rig-Winneke, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 9 Jan, 1985 and end
10 Jan, 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
60-			G	SAND; fine, medium grained, poorly sorted, consolidated with caliche.
70-			G	SAND; silty brown, consolidated, fairly well sorted, cemented with caliche.
75-			G	SAND; brown, consolidated, poorly sorted, cemented by calcite.
80-			G	SAND; Brown, semi-consolidated, poorly sorted cemented by calcite.
85-			G	SAND; silty, brown, poorly sorted, loosely loosely consolidated fine to medium grained.
90-			G	SILT; sandy, brown, unconsolidated, angular grains, poorly sorted.
95-			G	SAND; loosely cemented, poorly sorted, fine-medium grained, with fine medium cemented zones.
100-			G	SAND; unconsolidated fine-medium grained, poorly sorted with caliche "float", lithics 10%.
105-			G	SAND; fine grained, buff white, hard cemented with calcite.
110-			G	SAND; fine medium grained, cemented, quartzose, clear, poorly sorted with calcite matrix.
115-			G	SAND; fine - medium grained cemented, poorly sorted, lithics 15%, clear, quartzose, angular, calcite matrix.
120-				

Monitor Well C was grouted from 344 ft to the surface with 7 1/2 yds.³ of Portland Type I neat cement.

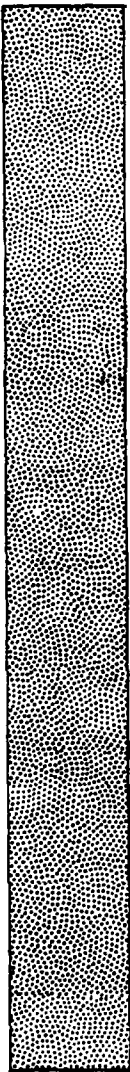
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #C

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Location Site 5, Landfill No. 5, Cannon AFB
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/Mud Rotary Rig-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 9 Jan. 1985 and end
10 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
120-			G	SAND; fine grained, unconsolidated, well-sorted.
125-			G	SAND; fine - medium grained, loosely consolidated, poorly sorted.
130-			G	SAND; fine - medium grained, poorly sorted, clear quartz, angular.
135-			G	SAND; medium grained, moderately sorted, cemented, grains cemented by calcite.
140-			G	SAND; silty, fine - medium grained, poorly sorted cemented.
145-			G	SAND; fine grained, well sorted, unconsolidated.
150-			G	SAND; brown, cemented with calcite, lithics 15%, quartz, subrounded, moderately sorted.
155-			G	SAND; brown, cemented with calcite, quartz grains well sorted, subrounded.
160-			G	SAND; silty, loosely consolidated, poorly sorted with 10% lithics.
165-			G	SAND; silty, loosely consolidated, poorly sorted with 10% lithics.
170-			G	SAND; silty, poorly sorted, loosely consolidated.
175-			G	SAND; silty, fine-medium grained, cemented by calcite, moderately sorted, subrounded quartz.
180-				

Monitor Well C was grouted from 344 ft(TD) to the surface with 7 1/2 yds.3 of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #C

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Location Site 5, Landfill No. 5, Cannon AFB
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/Mud Rotary Rig-Winneke, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 9 Jan. 1985 and end
10 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
180-			G	SAND; silty, fine grained, cemented, similar to above unit.
185-			G	SAND; silty, fine-medium, unconsolidated.
190-			G	SAND; fine-medium grained, silty, unconsolidated, poorly sorted.
195-			G	SAND; similar to above unit.
200-			G	SILT; brown, unconsolidated, little sand, sand, quartz, unconsolidated, poorly sorted.
205-			G	SILT; brown, unconsolidated, poorly cemented.
210-			G	SILT; brown with caliche clasts, and 10% sand, fine, moderately well sorted, subrounded.
215-			G	CLAY; green, with red oxidized sand clasts and fragments of grey clay and silt also.
220-			G	CLAY; silty, green, with medium grained sand, angular, lithics 10%.
225-			G	SAND; coarse, with minor gravel, poorly sorted angular, lithics 30%.
230-			G	GRAVEL; sandy with caliche nodules, unconsolidated, poorly sorted.
235-			G	SILT; buff-white, with white clay clasts, fine grained, well sorted, unconsolidated.
240-				

Monitor Well C was grouted from 344 ft to the surface with 7 1/2 yds.³ of
Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #C

Page 5 of 6

Location Site 5, Landfill No. 5, Cannon AFB
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/Mud Rotary Rig-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 9 Jan. 1985 and end
10 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
240-			G	SILT; sandy, brown, poorly sorted, unconsolidated fine grained.
245-			G	SAND; silty brown, poorly sorted, unconsolidated, with caliche nodules.
250-			G	SAND; medium grained, cemented, well sorted.
255-			G	SAND; buff-white, consolidated, fine medium grained, moderately well sorted, with 10% lithics.
260-			G	SAND; white, loosely consolidated, fine-medium sorted, subrounded.
265-			G	SILT; sandy, brown, loosely consolidated fine-medium, grained, poorly sorted, with caliche nodules.
270-			G	SAND; medium-coarse grained, angular, unconsolidated poorly sorted, with 15% black lithics.
275-			G	SILT; red-brown, fine, unconsolidated slightly cemented, with minor sand.
280-			G	SAND; red-brown, silty, poorly sorted, unconsolidated, sand, angular, clear.
285-			G	SAND; coarse, with minor gravel, unconsolidated, poorly sorted, angular.
290-			G	SAND; silty, fine-coarse, red-brown, unconsolidated, poorly sorted, sub-angular, 10% lithics.
295-			G	SAND; medium-coarse, with red-brown silty zones, loosely consolidated, 10% lithics.
300-				

Monitor Well C was grouted from 344 ft to the surface with 7 1/2 yds.3 of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #C

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Location Site 5, Landfill No. 5, Cannon AFB
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/Mud Rotary Rig-Winneke, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 9 Jan. 1985 and end
10 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
300-			G	SAND; silty, cemented, poorly sorted, fine-medium grained, subangular.
305-			G	SAND; hard cemented, medium-coarse, 1st hard streak 305'-306', cut at 306', clay matrix.
310-			G	SAND; medium-very coarse, unconsolidated, poorly sorted, 30% lithics, angular no matrix.
315-			G	SAND; unconsolidated, fine-coarse, angular with 30% lithics, some calcite matrix.
320-			G	SAND; medium-coarse, unconsolidated, with 30% lithics, subangular, gravel 10%.
325-			G	SAND/GRAVEL; loosely cemented, with red silt, also hard, drilling fast, color olive-brown.
330-			G	SAND; medium-coarse, unconsolidated, subangular, with 30% lithics, silt 20%, color olive brown.
335-			G	SAND; oxidized, highly weathered, with cemented grains, hard, fine-coarse, angular lithics.
340-			G	SAND; fine-coarse, and red silt, mottled with green clay clasts, reworked red beds, very hard 332'345'.
345-			G	SAND; cemented, confining, conglomerate, extremely hard, out of hard zone 349'.
350-			G	SAND; coarse, with gravel, unconsolidated with clay stringers grey and red.
355-			G	SAND; medium-coarse, unconsolidated, poorly sorted, with 20% clay, brown, hard cemented streak 6".
360-			G	SAND; hard, cemented, poorly sorted, angular very slow drilling.
362-				

Monitor Well C was grouted from 344 ft to the surface using 7 1/2 yds.³ of Portland Type I neat cement.

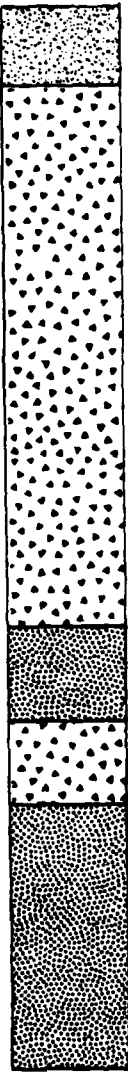
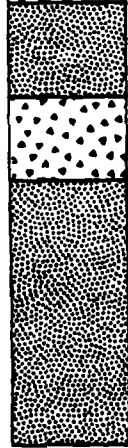
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #D

Page 1 of 6

Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary-Winneke, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 10 December 1984 and end
16 Dec. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	TOPSOIL; red, clayey with roots and organic matter.
5-			G	CALICHE; 4' with clayey silt, light grey.
10-			G	CALICHE; with silty sand.
15-			G	CALICHE; with silt, some fine sand (white nodules 19').
20-			G	CALICHE; extremely hard, silty, interbedded with fine sand.
25-			G	CALICHE; with sand, caliche nodules extremely hard, sand is cemented.
30-			G	CALICHE; with fine sand, caliche 80%, sand 20%.
35-			G	SAND; red-brown, cemented, medium-grained, oxidized, with bone grey chert and caliche fragments.
40-			G	CALICHE; with chert, buff grey, with minor sand, medium grained.
45-			G	SAND; buff grey, cemented, fine-medium grained, moderate-well sorted, grading to light tan clayey sand, cemented.
50-			G	SAND; light grey, extremely well sorted, cemented, hard.
55-			G	SAND; bone white, cemented, interbedded with red-brown, cemented sand.
60-				

Monitor Well D was grouted from 338 ft to the surface with 5 yds.³ of Portland Type I neat cement.

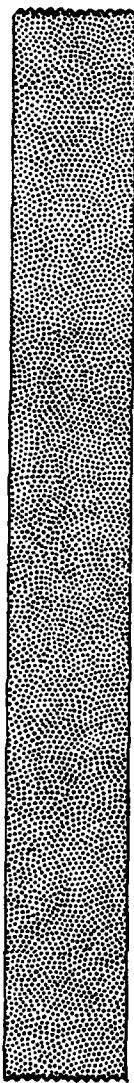
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #D

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Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 10 Dec. 1984 and end
16 Dec. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
60-			G	SAND; cemented, fine-medium grained, extremely well sorted, buff white.
65-			G	SAND; light brown, poorly sorted, loosely consolidated, fine-medium grained, subangular, friable, red volcanic fragments.
70-			G	SAND; brown, poorly sorted, uncemented, fine to medium grained, subangular, 10% clay.
75-			G	SAND; quartzose, fine-medium grain, well-sorted with 10% red lithic fragments, no clay or calcite cement.
80-			G	SAND; same as above, slightly finer grained.
85-			G	SAND; brown, fine-medium grained, very well well sorted, subrounded quartz, clear.
90-			G	SAND; brown, fine-medium grain, poorly sorted, lithics 10%, quartz well-rounded.
95-			G	SAND; brown, medium grained, moderately sorted, quartzose, subrounded, quartz (blue-clear), 10% volcanic fragments.
100-			G	SAND; brown, fine-medium, well sorted, finer than above unit.
105-			G	SAND; quartzose, brown, fine-medium grain, caliche stringer 1' thick.
110-			G	SAND; brown, fine-medium grained slightly cemented, trace of calcite cement.
115-			G	SAND; buff-white, fine grain, cemented with calcite, moderately sorted, hard.
120-				

Monitor Well D was grouted from 338 ft to the surface with 5 yds.³ of Portland Type I neat cement.

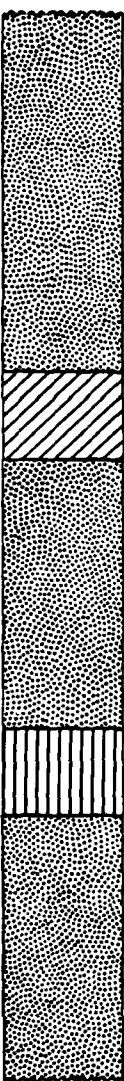
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #D

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Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary-Winneke, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 10 December 1984 and end
16 Dec. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
120-			G	SAND; brown, unconsolidated, fine-medium grained, quartzose.
125-			G	SAND; Fine-medium, quartzose, well sorted, subrounded.
130-			G	SAND; brown, fine-medium quartzose subrounded, unconsolidated.
135-			G	SAND; brown, medium grain, well sorted, subangular, quartz 90%.
140-			G	CLAY; silty, with sand, fine.
145-			G	SAND; silty, fine grained, well sorted with caliche nodules (from above).
150-			G	SAND; silty, fine, well sorted, subrounded, quartz 90%.
155-			G	SAND; silty, fine grained, well sorted, quartzose.
160-			G	SILT; sandy, fine grained, quartzose, well sorted.
165-			G	SAND; brown, fine grained, very well sorted, well-rounded.
170-			G	SAND; brown, medium grained, well sorted.
175-			G	SAND; brown, medium grained, very well sorted with 10% black lithic fragments.
180-				

Monitor Well D was grouted from 338 ft to the surface with 5 yds.3 of Portland Type I neat cement.

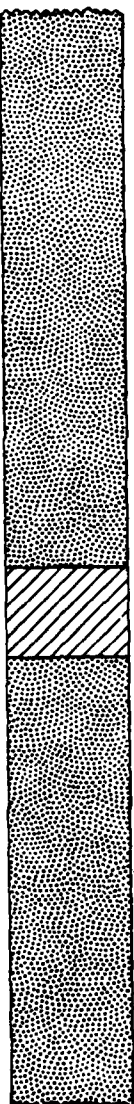
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #D

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Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 10 December 1984 and end
16 Dec. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
180-			G	SAND; silty, brown, fine-medium grained, well sorted, subrounded.
185-			G	SAND; brown, silty, very fine grained, well sorted, unconsolidated, finer than above.
190-			G	SAND; brown, medium grained, moderately sorted, coarser than above unit, quartz, subangular, clear, 10% lithics.
195-			G	SAND; brown, poorly sorted, fine to medium grained, 10% lithic fragments.
200-			G	SAND; brown, fine-medium grained, very little clay, 10% lithic fragments, black.
205-			G	SAND; brown, unconsolidated, silty, fine-medium grained with caliche layer at 205'-206'.
210-			G	CLAY; yellow regolith, with iron stained clasts.
215-			G	SAND; fine-coarse, poorly sorted, with 25% red and black lithics, unconsolidated gravel 18%.
220-			G	SAND; fine-medium grained, poorly sorted, finer than above unit, unconsolidated, subrounded sand and gravel.
225-			G	SAND; coarse, with 25% gravel, sand is poorly sorted, subangular, quartz is clear and yellow.
230-			G	SAND AND GRAVEL: buff-brown, cemented poorly with calcite, gravel 10%.
235-			G	SAND; buff-brown, fine-medium grained, poorly cemented, calcite matrix, lithics, 5% gravel.
240-				

Monitor Well D was grouted from 338 ft to the surface with 5 yds.³ of Portland Type I neat cement.

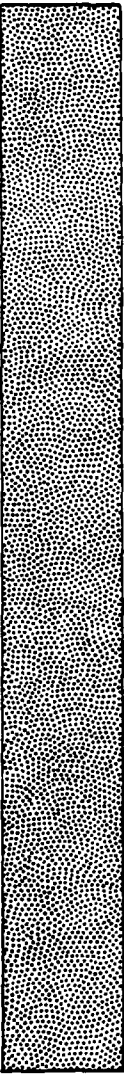
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #D

Page 5 of 6

Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 10 December 1984 and end
16 Dec. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
240-			G	SAND; buff-brown, cemented, fine-medium grained, poorly sorted.
245-			G	SAND; brown, unconsolidated, medium grained, quartzose.
250-			G	SAND; coarse, unconsolidated, poorly sorted, angular, with 15% lithics, calcite cement.
255-			G	SAND; brown, unconsolidated, poorly sorted, angular with 10% lithics, calcite cement.
260-			G	SAND; fine-medium grained, poorly sorted, subangular, unconsolidated.
265-			G	SAND; brown, medium grained, very well sorted, quartz 95%, clear, rounded.
270-			G	SAND; brown, fine-medium grained, moderately sorted, 15% lithics.
275-			G	SAND; unconsolidated, well sorted, 85% quartz, rounded.
280-			G	SAND; fine-medium grained, unconsolidated, moderately well sorted, quartz 85%.
285-			G	SAND; brown, medium grained, moderately well sorted, 20% lithic fragments.
290-			G	SAND; brown, fine-medium grained, poorly sorted, unconsolidated, subrounded, 20% lithics, caliche clasts 5-10%.
295-			G	SAND; brown, well sorted, medium grained, less dirty than unit above, hard streak at 299'.
300-				

Monitor Well D was grouted from 338 ft to the surface with 5 yds.³ of
Portland Type I neat cement.

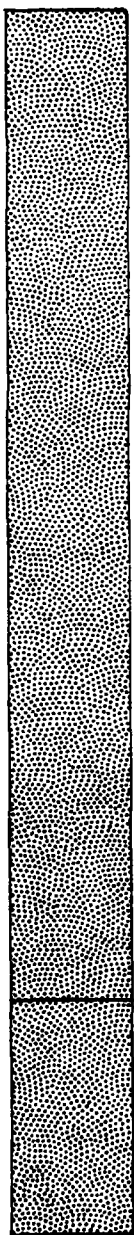
*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Monitor Well #D

Page 6 of 6

Location Cannon AFB, Site 5 Landfill No. 5
Log Recorded by T.K. Walters
Type Drill Rig and Operator Failing 1500
Air/mud rotary-Winnek, Inc.-B Holland

Project Cannon AFB-Phase II Stage I
Beginning 10 December 1984 and end
16 Dec. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
300-			G	SAND; medium-coarse, poorly sorted, unconsolidated with 30% black lithic fragments.
305-			G	SAND; brown, fine grained, well sorted.
310-			G	SAND; fine-medium grained, moderately well sorted, rounded, with 10% lithics.
315-			G	SAND; brown, coarse grain, poorly sorted, subangular with 15% lithics.
320-			G	SAND; brown, fine-medium grain, poorly sorted, subrounded.
325-			G	SAND; dark brown, extremely hard zone at 329', cemented.
330-			G	SAND; very hard sand, fine grain, out of hard zone 333', in again 334'-335'.
335-			G	SAND; medium grain, 335-339' unconsolidated, cemented sand 339-340', confining.
340-			G	SAND; unconsolidated 340-342', fine-medium hard streak 342-344', medium-coarse sand with 15% lithic fragments.
345-			G	SAND; medium grained, fairly unconsolidated, drilling faster than above.
350-			G	SAND; same as above, medium grained, moderately well sorted.
355-			G	SAND; fine-medium grained, moderately well sorted, unconsolidated, hard streak at 359-360'.
360-			G	360-361' out of cemented zone. 361-362' into cemented zone.
365-			G	SAND; 362-365' unconsolidated, drilling faster.
367 1/2--			G	SAND: Same as above.

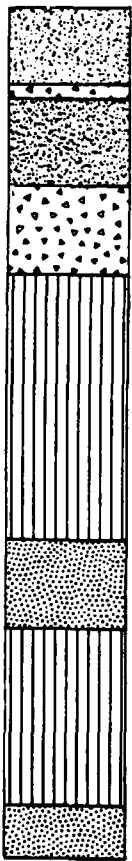
Monitor Well D was grouted from 338 ft to the surface with 5 yds.³ of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab. E-60

Log of Drilling Operations
Deep Soil Boring #SB-6A

Location Site 6 Fire Dept. Training Area #1
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 19 November 1984 and end
19 Nov. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-6A-1	ST	TOPSOIL; dark brown, dry, with caliche, hard, topsoil - caliche contact 4.7'.
5-		SB-6A-2	ST	SUBSOIL; light brown, silty, grading down to dark brown, silty soil and grey clay, hard caliche 9'-10'.
10-			G	CALICHE; soft, moist, cherty zone 11'-12.5', caliche and silt 13'-15', out of chert zone 13'.
15-			G	SILT; buff, with caliche (slightly moist).
20-			G	SILT; buff-brown, with caliche clasts, grading to hard caliche 22.5'-25'.
25-			G	SILT; buff-brown, with calcite matrix, hard caliche stringers 6" thick, grading to brown sand.
30-			G	SILTY SAND; with calcite matrix, hard caliche at 31' with chert clasts, 32'.
35-			G	SILT; buff-white, with minor caliche.
40-			G	SILT; buff-brown, with calcite matrix, grading to silty sand.
45-		SB-6A-3	ST	SAND; medium grained moderately sorted, subrounded, unconsolidated.

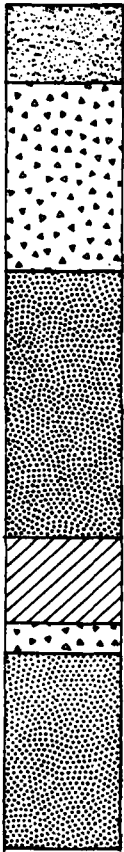
Borehole 6A was grouted from 48 1/2 ft(TD) to the surface with 7 bags of Portland type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #SB-6B

Location Site 6B Fire Training Area No. 1
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 20 November 1984 and end
20 Nov. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-6B-1	ST	TOPSOIL; dark brown, moist, with roots and other organic matter, subsoil 1.5'-3.0', buff-brown w/little organic matter.
5-		SB-6B-2	ST	CALICHE; with buff-brown silt, well indurated, friable, increase in % caliche with depth.
10-			G	CALICHE; slightly moist, buff, silty, chert nodules from 11.0'-15.0', 1" diameter.
15-			G	SAND; silty, buff brown, unconsolidated, fairly well sorted.
20-			G	SAND; fine-medium grained, silty, subrounded, unconsolidated with calcite matrix.
25-			G	SAND; fine-medium grained, brown, unconsolidated, moderately sorted, extremely fast drilling.
30-			G	SILT; buff, sandy with caliche nodules, nodules occurred from 34.0'-36.0', well indurated.
35-			G	SAND; buff-brown, with calcite cement, fairly well sorted, loosely consolidated.
40-			G	SAND; brown, fine-medium grained, poorly sorted, unconsolidated, bottomed in sand, at 47 1/2'.
45-		SB-6B-3	ST	SAND; similar to above unit.
50-				

Borehole 6B was grouted from 47 1/2 ft(TD) to the surface with 8 bags of Portland Type I neat cement.

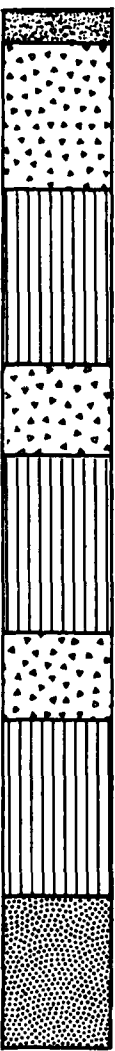
*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #SB-7

Location Site 7 Fire Dept. Training Area #2
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 18 November 1984 and end
18 Nov. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
0-		SB-7-1	ST	TOPSOIL; overlying hard caliche at 2.0', silty, dark brown.
5-		SB-7-2	ST	CALICHE; with silt, buff brown, moist, gummy, calcite cement, poor plasticity.
10-			G	SILT; buff-brown with silty clay 12.5'-14.0' caliche stringers 14.0'-15.0'.
15-			G	SILT; buff-brown, with silty clay 12.5'-14.0' caliche stringers 19.0-20.0'.
20-			G	CALICHE; hard, white with minor silt becoming silty 23.0'-25.0', silt, poorly cemented, white.
25-			G	SILT; with caliche, buff-brown, poorly cemented, soft.
30-			G	SILT; buff-brown, with caliche, cemented with calcite, soft, fast drilling.
35-			G	CALICHE; hard, coming out in 1" nodules, drilling slow.
40-			G	SILT; buff-brown, soft, unconsolidated, with minor caliche 42.0'-45.0'.
45-			G	SILT; sandy with hard caliche stringers 6" thick, silt is oxidized, increase in sand 47.0'-50.0'
50-		SB-7-3	ST	SAND; weathered, fine-medium grained, with clay streaks.
55-				
60-				

Borehole SB-7 was grouted from 58.4 ft(TD) to the surface with 10 bags of Portland Type I neat cement.


*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #SB-8

Location Site 8 Fire Dept. Training Area #3
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 17 November 1984 and end
17 Nov. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-8-1	ST	TOPSOIL; red-brown, silty, with buff silt and caliche 2.5'-4.0' turning to hard white caliche at 4.9'.
5-		SB-8-2	ST	SILT; soft, light brown, with interbedded caliche stringers.
10-			G	SILT; buff brown with white caliche nodules.
15-			G	CALICHE; hard white, pebbly, coming out in 1" nodules.
20-			G	CLAY; grey brown, silty, weathered with minor caliche, silt stringers 17.5'-20.0'.
25-			G	CALICHE; white, weathered, with minor clay becoming extremely hard from 29.0'-30.0'.
30-			G	SILT; buff-brown, with 2" stringers of white caliche, becoming more silty with depth.
35-			G	SILT; fine-grained, buff brown, "powdery" textures, calcite matrix.
40-			G	SILT; buff-brown with 2" caliche nodules throughout.
45-			G	CALICHE; hard, white, with sand in lower portion.
50-			G	SAND; silty, unconsolidated, no cuttings return.
55-		SB-8-3	ST	SAND; fairly consolidated, moderately sorted, subrounded, quartz 90%.
60-				

Borehole SB-8 was grouted from 61.5 ft(TD) to the surface with 10 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #9A

Location Site 9A Fire Dept. Training Area #4

Log Recorded by Boettner

Type Drill Rig and Operator Mobile B-61

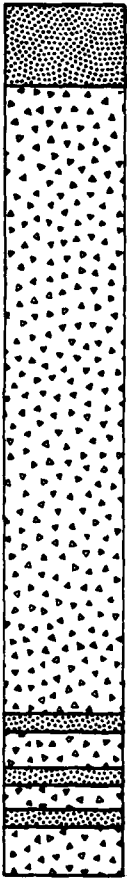
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I

Beginning 16 January 1985 and end

16 Jan. 1985 of drilling operation

Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-			G	SAND; brown, clayey, silty, fine to medium changing to soft caliche at 4.2 feet.
5-		SB9A-1	ST	CALICHE; tan, fine grained sand, sparse calcite gravels, soft.
10-		SB9A-2	ST	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement.
15-			G	CALICHE; tan, fine to medium sand, subangular to subround with abundant calcite cement.
20-			G	CALICHE; tan, fine sand, subround with abundant calcite cement.
25-			G	CALICHE; tan, fine sand, subangular to subround with abundant calcite cement.
30-			G	CALICHE; tan, fine to very fine sand, subround to round with abundant calcite cement.
35-			G	CALICHE; tan/pink, fine to very fine sand, subround with abundant calcite cement.
40-			G	CALICHE; tan changing to red at 42', fine to medium subangular to subrounded soft calcite cement matrix; rapid drill rate.
45-			G	SAND/CALICHE: alternating hard and soft layers of fine sand and indurated calcite cemented sand; very indurated below 45' - unable to push sample.
50-				

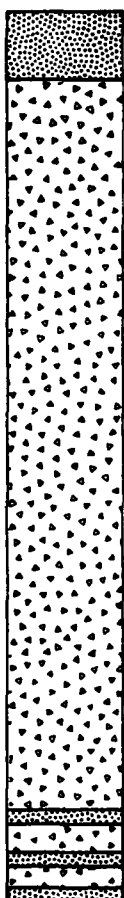
Borehole 9A was grouted from 47.5 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #9B

Location Site 9B Fire Training Area 4
 Log Recorded by Boettner
 Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
 Beginning 17 January 1985 and end
17 Jan. 1985 of drilling operation
 Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB9B-1	ST	SAND; brown, clayey, silty, fine to medium changing to caliche at 4.5'.
5-		SB9B-2	ST	CALICHE; tan, fine to very fine, abundant calcite cement.
10-			G	CALICHE; tan, fine to very fine sand, abundant calcite cement, slightly indurated.
15-			G	CALICHE; tan, fine sand, subangular to subround abundant calcite cement.
20-			G	CALICHE; tan to white, fine to medium sand, subangular to subround, abundant calcite cement.
25-			G	CALICHE; tan/white, fine to medium sand, subround to subangular, abundant calcite cement.
30-			G	CALICHE; tan to white, fine to medium sand, subround to subangular, abundant calcite cement.
35-			G	CALICHE; tan, fine to medium sand, subround, soft with abundant calcite cement.
40-			G	CALICHE; pink, fine sand, subangular to subround, less cemented with depth.
45-		SB9B-3	G	SAND/CALICHE; alternating hard and soft layers of fine sand and indurated calcite cemented sand; very indurated below 47.5 feet - no sample recovered.
50-				

Borehole 9B was grouted from 50 ft (TD) to the surface using 8 bags of Portland Type I neat cement.


*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #11A

Location Site 11A Engine Test Cell
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning January 14, 1985 and end
Jan 14, 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-11A-1	ST	TOPSOIL; light brown intermixed with caliche
5-				hard caliche from 1'-2', confining, silty
		SB-11A-2	ST	zone 2'-5'.
10-			ST	SILT; with caliche, caliche nodules 1"
				diameter, silt, buff brown, moist.
15-			G	SILT; buff-brown, moist with minor clay,
				caliche nodules, 1/2" diameter.
20-			G	SILT; sandy, fine-medium grained, with clay,
				poor plasticity, moist.
25-			G	CALICHE; well indurated, with interbedded
				caliche nodules, and sand (medium
30-			G	grained) slow drilling.
				CALICHE; wet, with silt, fairly indurated,
35-			G	clay matrix, slow drilling, dry silt
				27 1/2'-30' (out of moist zone).
40-				SAND; cemented, well indurated, fine-medium
45-				grained, poorly sorted, calcite cement,
50-				no penetration.
55-				
60-				

Rehole 11A was grouted from 35 ft(TD) to the surface with 5 bags of Portland
Type I neat cement.












*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #SB-11B

Location Site 11B Engine Test Cell
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFE-Phase II Stage I
Beginning 15 Jan 1985 and end
15 Jan 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
0-			G	SILT/CLAY; tan, sandy, clay <10% caliche at 4 feet.
5-		SB11B-1	ST	SILT/CALICHE; tan, sandy with poorly developed nodular caliche.
10-		SB11B-2	ST	CALICHE; tan sand, fine to very fine, indurated with sparse calcareous gravels.
15-			G	CALICHE; tan sand, fine, rounded in a well indurated matrix of calcium carbonate.
20-			G	CALICHE; tan sand, fine, rounded in a calcareous matrix.
25-			G	CALICHE, tan sand, fine, well rounded frosted quartz in an calcareous matrix.
30-			G	CALICHE; tan, sand well rounded frosted quartz in an indurated calcareous matrix.
35-			G	CALICHE; tan/pink sand, fine to very fine well indurated.
40-			G	CALICHE/SAND; tan/pink, fine, well rounded sand, frosted, friable.
45-		SB11-3	ST	SAND; pink, fine, well rounded, frosted in a loose calcareous matrix.
50-				
55-				

Borehole 11B was grouted from 51 ft (TD) to the surface using 8 bags of Portland Type neat cement.

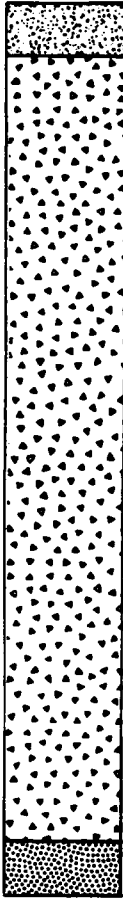
*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #15A

Location Site 15 AGE Drainage Ditch
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 27 Jan. 1985 and end
27 Jan. 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB15A-1	ST	TOPSOIL; red-brown, clayey, sandy loam with scattered pebbles changing to caliche at 3.0'.
5-			G	CALICHE; tan, fine grained sand with abundant calcite cement, soft moist.
10-		SB15A-2	ST	CALICHE; tan, fine to medium sand, subround to round with abundant calcite cement; color change to gray at 14'.
15-			G	CALICHE; gray, fine sand, subround to round with abundant calcite cement, soft, very friable.
20-			G	CALICHE; gray to tan, fine sand, subround with abundant calcite cement-very indurated.
25-			G	CALICHE; gray/tan, fine sand, subround to round with abundant calcite cement, indurated.
30-			G	CALICHE; tan, fine sand, subround with abundant calcite cement, alternating hard/soft layers.
35-			G	CALICHE; rose, fine to medium, subround, sand with abundant calcite cement, highly indurated.
40-			G	CALICHE; pink/tan, fine sand with abundant calcite cement, highly indurated.
45-			G	CALICHE; gray/white fine to medium sand with calcite cement becoming softer with depth.
50-		SB15A-3	ST	SAND; reddish, fine to medium, subround with calcite cement overgrowth, on grains.
55-				

Borehole SB-15A was grouted from 50.5 ft (TD) to the surface using 7 bags of Portland type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #15B

Location Site 15B AGE Drainage Ditch
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 28 Jan 1985 and end
28 Jan 1985 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
0-			G	TOPSOIL; red-brown, fine to medium clayey sand changing to caliche at 4'; sand with abundant calcite cement.
5-		SB15B-1	ST	CALICHE; pink, fine to medium sand, with abundant calcite cement.
10-		SB15B-2	ST	CALICHE; pink/tan, fine sand subround with abundant calcite cement.
15-			G	
20-			G	CALICHE; pink/tan, fine sand subround to round with abundant calcite cement, indurated.
25-			G	CALICHE; tan, fine sand subround to round with abundant calcite cement, indurated.
30-			G	CALICHE; tan, fine sand, subround to round with abundant calcite cement, color change to gray at 28' increasing softness w/depth.
35-			G	CALICHE; gray, fine sand, subround with abundant calcite cement, alternating layers of induration.
40-			G	CALICHE; gray/brown, clayey, fine sand with abundant calcite cement, moist.
45-			G	CALICHE; brown, clayey, fine sand with abundant calcite cement alternating hard/soft layers.
50-		SB15B-3	ST	CALICHE; Brown/gray, fine sand with abundant calcite cement, highly indurated altering to friable sand at 49'.
55-				SAND; gray/pink, fine to very fine.

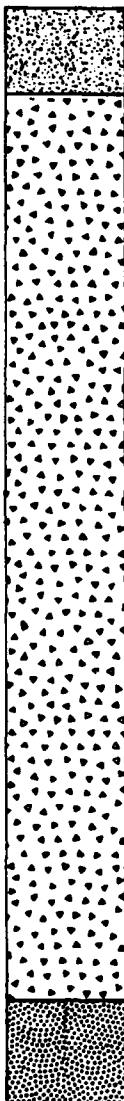
Borehole 15B was grouted from 52.5 ft (TD) to the surface using 8 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab

Log of Drilling Operations
Deep Soil Boring #17A

Location Site 17A Entomology Rinse Area
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 27 Nov 1984 and end
27 Nov 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB17A-1	ST	SAND/SILT; tan to pink/brown fine to medium grain, clay <5%, caliche at 4.5 feet.
5-		SB17A-2	ST	
		SB17A-3	ST	CALICHE/SAND; brown to tan medium grain with silt in a calcium carbonate matrix.
10-			G	CALICHE; light tan, clay <5%, fine to medium grained sand.
15-			G	CALICHE; light tan, fine to medium grained sand in a CaCO ₃ matrix.
20-			G	CALICHE; light tan, fine to medium grained sand in a CaCO ₃ matrix.
25-			G	CALICHE; light tan, fine to medium grained sand in a CaCO ₃ matrix.
30-			G	CALICHE; tan to white, fine to medium grained sand with sparse nodular calcareous gravels.
35-			G	CALICHE; tan to white, fine to medium grained sand in a CaCO ₃ matrix.
40-			G	CALICHE; tan to white, fine to medium grained sand in a CaCO ₃ matrix.
45-			G	CALICHE; tan to white, fine to medium grained sand in a CaCO ₃ matrix, subangular to subrounded grains.
50-			G	CALICHE; tan, fine to medium grained sand with sparse nodular calcareous gravels.
55-		SB17A-4	ST	SAND; tan, fine to medium grained, well rounded, frosted quartz sand in a calcareous matrix.
60-				

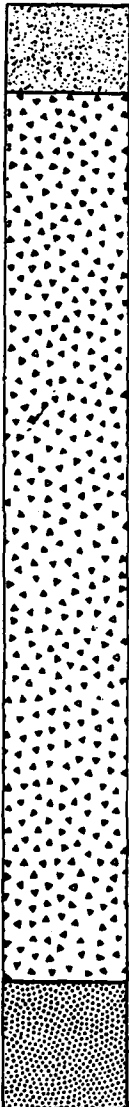
Borehole 17A was grouted from 62.5 ft (TD) to the surface using 9 bags of Portland Type 1 neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

Log of Drilling Operations
Deep Soil Boring #17B

Location Site 17B Entomology Rinse Area
Log Recorded by Boettner
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 28 Nov 1984 and end
28 Nov 1984 of drilling operation
Sampling Interval (Estimated) 5 (ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB17B-1	ST	SILT/SAND; tan to red brown, fine to very fine grained with clay <50% caliche at 4.5 feet.
5-		SB17B-2	ST	CALICHE; tan, fine to medium sand, sub-angular to round in a calcareous matrix.
10-			G	CALICHE; tan, fine to medium grained sand in a calcareous matrix.
15-			G	CALICHE; tan to white, sand, fine to medium grained sand in a calcareous matrix.
20-			G	CALICHE; tan to white, nodular sand, fine, well rounded.
25-			G	CALICHE; tan to white sand, fine to very fine grained, well rounded in a calcareous matrix.
30-			G	CALICHE; tan to white sand, fine to very fine grained, well rounded in a calcareous matrix.
35-			G	CALICHE; white to pink sand fine, well rounded in a calcareous matrix.
40-			G	CALICHE; white sand, fine, well rounded in a calcareous matrix.
45-			G	CALICHE; white sand, fine grained, well rounded in a calcareous matrix, sparse gravels.
50-			G	CALICHE; sandy, fine to very fine grained, well rounded with sparse calcareous gravels.
55-		SB17B-3	ST	SAND; calcareous matrix - no sample recovery because of consolidated nature of material.
60-				

Borehole 17B was grouted from 63 ft (TD) to the surface using 9 bags of Portland Type 1 neat cement.

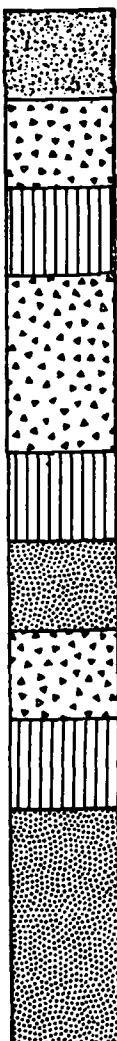
*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #17C

Location Site 17C Entomology Rinse Area
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning January 14, 1985 and end
Jan 14, 1985 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken *	Lithologic Description
0-		SB-17C-1	ST	TOPSOIL; unconsolidated, red-brown, 0-2' sub-soil, unconsolidated red-brown, with minor caliche.
5-			G	CALICHE; light brown, with minor silt, inter-mixed, loosely consolidated, grading to silty sand from 4 1/2'-10'.
10-		SB-17C-2	ST	SILT; buff-brown, slightly moist, sand, out of caliche zone.
15-			G	CALICHE; with silt, well indurated, buff-brown, sandy, poorly sorted.
20-			G	CALICHE; nodular, clasts 1"-2" diameter, with loosely consolidated silt.
25-			G	SILT; brown, with 25% caliche nodules throughout <1" diameter.
30-			G	SAND; silty, dark brown, with 15% caliche, nodules <1/2" diameter.
35-			G	CALICHE; with fine grained silty sand (20%), buff brown, unconsolidated, poorly sorted.
40-			G	SILT; sandy, brown, unconsolidated, poorly sorted, fine-medium grained.
45-			G	SAND; silty, unconsolidated, brown, poorly sorted fine-medium, fast drilling.
50-			G	SAND; silty, unconsolidated, poorly sorted, fine-medium grained.
55-		SB-17C-3	ST	SAND; silty, unconsolidated, poorly sorted, (as above).
60-				

rehole 17C was grouted from 58 ft(TD) to the surface with 7 bags of Portland cement.
pe I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab

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Log of Drilling Operations
Deep Soil Boring #SB-19A

Location Site 19A MORGAS Spill
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 18 December 1984 and end
18 Nov. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken*	Lithologic Description
0-		SB-19A-1	G	TOPSOIL; red, with charcoal and other debris, sharp contact with caliche at 5', ground disturbed.
5-		SB-19A-2	G	CALICHE; silty buff-brown, white at upper contact, interbedded with silt from 8'-10'.
10-			G	CALICHE; buff, intermixed with silt, caliche nodules 1" diameter, poorly sorted, possible ground disturbance.
15-			G	SILT; buff-brown, loosely consolidated, grading to silty sand from 17'-20'.
20-			G	SAND; silty, with hard caliche layer at 20', caliche nodules throughout unit, 2" diameter, silt, 10%.
25-			G	CALICHE; in nodular form intermixed with silt, 2" diameter, well indurated.
30-			G	SAND; silty, brown, cemented with calcite, loosely consolidated, several zones of cemented calcite 6" thick.
40-			G	SAND; red-brown, oxidized, with 20% calcite matrix.
45-			G	SAND; fine-medium grained, unconsolidated, extremely fast drilling at 47 1/2'.
50-		SB-19A-3	G	CALICHE; in the form of "calcrete" and chert, extremely hard, rig unable to penetrate.
55-				
60-				

Borehole 19A was grouted from 47 1/2 ft(TD) to the surface with 8 bags of Portland Type I neat cement.

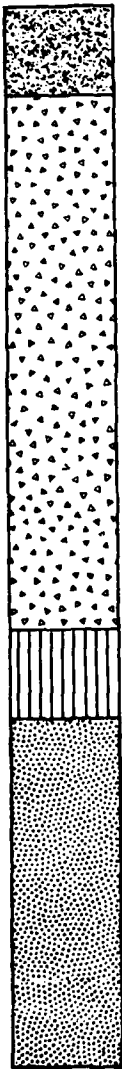
*ST = Shelby tube; SS = split-spoon; G = grab.

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Log of Drilling Operations
Deep Soil Boring #19B

Location Site 19B MOGAS Spill
Log Recorded by T.K. Walters
Type Drill Rig and Operator Mobile B-61
Hollow-Stem Auger - Winnek, Inc.

Project Cannon AFB-Phase II Stage I
Beginning 19 December 1984 and end
19 Dec. 1984 of drilling operation
Sampling Interval (Estimated) 5(ft)

Depth (ft)	Graphic Log	Core Sample Interval/ID	Type of Sample Taken	Lithologic Description
0-		SB-19B-1	ST	ROCK; and asphalt, debris from 0-11" topsoil, red-brown, slightly discolored, with subsoil 3'-5'.
5-		SB-19B-2	ST	CALICHE; with minor silt, white, fairly soft moist, becoming granular from 9'-10'.
10-			G	CALICHE; extremely soft, moist, buff-white slightly silty.
15-			G	CALICHE; silty, buff-brown, dry, unconsolidated.
20-			G	CALICHE; hard, with chert nodules from 22-25'; caliche coming out as nodules 2" diameter.
25-			G	CALICHE; slightly cemented and silt, fairly soft.
30-			G	CALICHE; silty, poorly cemented, loosely consolidated.
35-			G	SILT; buff, cemented with clay, some chert nodules 1" diameter, increase in calcite 37'-40'.
40-			G	SAND; dark brown, cemented, extremely hard, out of zone 42.5' becoming unconsolidated.
45-			G	SAND; silty, unconsolidated, poorly sorted, uncemented.
50-			G	SAND; light red, unconsolidated with caliche nodules 2" diameter, very well indurated.
55-		SB-19B-3	ST	SAND; loose, unconsolidated, no caliche present.
60-				

Borehole 19B was grouted from 59 1/2 ft (TD) to the surface with 9 bags of Portland Type I neat cement.

*ST = Shelby tube; SS = split-spoon; G = grab.

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INSTALLATION RESTORATION PROGRAM PHASE II

CONFIRMATION/QUANTIFICATION STA..(U) RADIAN CORP AUSTIN

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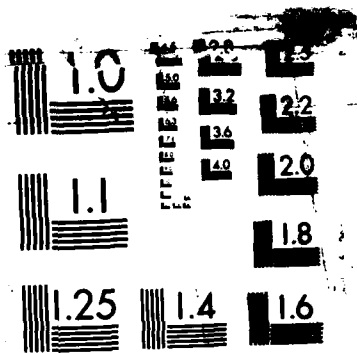
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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APPENDIX F
Raw Field Data

WATER LEVELS, CANNON AFB, MONITOR WELLS

Well No.	Depth to Water (ft)	Date Measured	Measuring Point Heights (ft)
Well A	262.75	1/10/85	2.35
	262.75	1/23/85	2.35
	262.50	4/4/85	
Well B	265.84	12/10/84	2.80
	265.65	12/11/84	2.80
	265.66	1/8/85	2.80
	265.80	4/4/85	2.80
Well C	265.80	1/23/85	2.96
	267.29	4/4/85	2.96
Well D	265.20	1/23/85	2.67
	264.39	4/4/85	2.67

FIRST ROUND WATER LEVEL MEASUREMENTS (4/4/85)

	Elevation of Measuring Point	Water Level Elevation Below Measuring Point	Measuring Point Height (ft)	Water Level Elevation Below MSL (ft)
Well A	4267.46	4004.96	2.35	4002.61
Well B	4266.04	4000.24	2.8	3997.44
Well C	4267.90	4000.61	2.96	3997.65
Well D	4265.90	4001.51	2.67	3998.84

APPENDIX G
SAMPLING & ANALYTICAL PROCEDURES

- o Field Investigation Quality Control Plan
- o Quality Assurance/Quality Control Program for
Radian Analytical Services

1.0 INTRODUCTION

Field investigations under the US Air Force Installation Restoration Program generate a large number of soil, waste and/or water samples for chemical analyses. The analytical results are then used to interpret the impact of a waste site upon the local hydrogeologic system(s). Since each analyses forms a foundation for interpretation, it is important that each sample is representative of a particular situation.

A quality control (QC) plan provides a guideline through which field samples can be obtained, preserved and controlled. This will ensure that the integrity of the sample is maintained and that no contamination or cross contamination will occur.

The remainder of this QC plan describes the general collection of soil, waste and water samples. Additionally, methods of preservation, shipping and administrative controls are discussed.

1.1 Analytical Parameters

The soil samples collected during the drilling of the shallow soil borings were tested for the following analytical parameters:

- o Oil and Grease
- o Lead
- o TOC
- o Inorganic species including arsenic, barium, cadmium, chromium (total) copper, iron, nickel, mercury, selenium, silver and zinc.

Additionally, Site 17 samples were tested for pesticides and herbicides.

The water samples collected from the monitor wells were analyzed for the following:

Purgeable Halocarbons, EPA Method 601

Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chlorobenzene
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Chloromethane
Dibromochloromethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
trans-1,2-Dichloropropene
1,2-Dichloropropane
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Methylene chloride
1,1,2,2-Tetrachloroethane
Tetrachloroethene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

Purgeable Aromatics, EPA Method 602

Benzene
Chlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Ethylbenzene
Toluene

General Ions

Calcium	EPA Method 200.7
Magnesium	EPA Method 200.7
Sodium	EPA Method 200.7
Potassium	EPA Method 200.7
**Manganese	EPA Method 200.7
**Chloride	EPA Method 325.2
Sulfate	EPA Method 375.3
Phosphate (Total)	EPA Method 365.4
*Nitrate (AS-N)	EPA Method 353.1

General Water Quality

**pH
**Total Dissolved Solids
Conductivity

*Interim Primary Drinking Water
Standard Parameter (40 CFR 141)

**Secondary drinking water regulation
parameter (40 CFR 143)

2.0 QUALITY CONTROL PROCEDURES FOR SOIL AND WASTE SAMPLING
AND ANALYSIS

Based upon the sampling scheme as discussed in the Statement of Work, soil samples will be collected from the following areas:

TABLE 2.0

Location
Site 9, Fire Department Training Area No. 4
Site 15, AGE Drainage Ditch
Site 6, Fire Department Training Area No. 1
Site 11, Engine Test Cell Pit
Site 4, Landfill No. 4
Site 1, Landfill No. 1
Site 3, Landfill No. 3
Site 2, Landfill No. 2
Site 19, MOGAS Spill
Site 17, Entomology Rinse Area
Site 7, Fire Department Training Area 2
Site 8, Fire Department Training Area 3
Site 12, Stormwater Collection Point
Site 13, Sewage Lift Station Overflow
Site 16, Solvent Disposal Site

Analytical methods for the soil samples are summarized in Table 2-1. Field collection procedures are described in Table 2-2. Quality control procedures for sample collection and analysis are discussed below.

2.1 Collection of Soil Samples

Quality control procedures associated with soil sampling will be an integral part of the sampling methodology. These procedures focus upon

TABLE 2-1. ANALYTICAL METHODS AND DETECTION LIMITS
(FOR WATER UNLESS SHOWN)

Parameter	Method	Detection Limit
*Total Organic Carbon (TOC)	EPA 415.1	1000 ug/L (1000 ug/g sediment)
Purgeable: Halo-carbons and Aromatics	EPA 601 and 602	**
Oil and Grease (using IR)	EPA 413.2	100 ug/L (100 ug/g, sediment)
Total Dissolved Solids (TDS)	EPA 160.1	1000 ug/L
Lead	EPA 239.2	20 ug/L (2 ug/g, sediments)
Chromium	EPA 218.1	50 ug/L (5 ug/g, sediment)
Mercury	EPA 245.1 and 245.5 (soils)	1 ug/L (0.1 ug/g, sediment)
Phenol	EPA 420.1	1 ug/L (1 ug/g, sediment)
pH	-	-
EP Toxicity	EPA 7310	***
Ignitibility	EPA 1010	****
Pesticides	EPA 608	-

TABLE 2-2. FIELD COLLECTION OF SAMPLES

Following guidance is provided field survey personnel to assist them in collecting, preparing and preserving samples.

Soil Sample Collection

Soil samples will be placed in containers as described below:

Analysis Required

Purgeable halocarbons and aromatics

All other parameters

Field Procedure

Prepare a homogeneous soil mixture and fill 4 each 40 ml VOA vials. (2 vials for RAS, 2 vials for OEHL.) Keep samples chilled to 4°C.

Prepare a homogeneous soil mixture and fill 2 each 1-quart glass jar (1 jar for RAS, 1 for OEHL.) Note: One jar provides RAS with sufficient soil to perform any or all requested analyses. Keep samples chilled.

Water Sample CollectionAnalysis Required

TOC and/or phenol

Purgeable halocarbons and aromatics

Field Procedure

Collect sufficient water and fill 2 each 500 ml glass jars. Add 2 ml (1 plastic pipet full) of Sulfuric Acid to each jar. (1 jar for RAS, 1 for OEHL.) Keep samples chilled to 4°C.

Collect sufficient water and fill 4 each 40 ml VOA vials to the top (no air bubbles present). Cap and seal the vials. No air bubbles should be present. (2 vials for RAS, 2 for OEHL.) Keep samples chilled to 4°C.

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Total dissolved solids

Collect sufficient water and fill 2 each 500 ml plastic bottles nearly full of water. No preservation required. Cap bottles and keep samples chilled to 4°/c, (1 bottle for RAS, 1 for OEHL).

Lead, chromium and mercury

Collect sufficient water and fill 2 each 500 ml (1 plastic pipet full) of Nitric Acid to each bottle (1 bottle for RAS, 1 for OEHL). Keep samples chilled.

Oil and grease

Collect sufficient water and fill 2 each 1-quart glass bottle nearly to the top. Add 2 ml (1 plastic pipet full) of Sulfuric Acid to each bottle (1 bottle for RAS, 1 for OEHL). Keep samples chilled.

Field Sample No. _____

Company Sampled/Address _____

Sample Point Description _____

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name _____ Date/Time Sampled _____

Amount of Sample Collected _____

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ - 10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Figure 2-1

Figure 2-2. INFORMATION TO ACCOMPANY SAMPLES FORWARD TO OEHL

1. Installation name (base)
2. Purpose of sample (analyte)
3. Sample Number (on containers)
4. Source/location of sample
5. Contract Task Number and Title of Project
6. Method of collection (i.e., bailer, suction pump, airlift pump, split spoon, etc.)
7. Volumes removed before sampling
8. Special conditions (use of surrogate standard, special nonstandard preservation, etc.)

ENVIRONMENTAL SAMPLING DATA										DRAFT										OEHL USE ONLY																			
(Use this space for mechanical imprint)										SAMPLING SITE IDENTIFIER (AFR 19-7)										BASE WHERE SAMPLE COLLECTED																			
										SAMPLING SITE DESCRIPTION																													
DATE COLLECTION BEGAN (YYMMDD)					TIME COLLECTION BEGAN (24 hour clock)					COLLECTION METHOD																													
										<input type="checkbox"/> GRAB <input type="checkbox"/> COMPOSITE _____ HOURS																													
MAIL REPORTS TO (circle if changed)		ORIGINAL		COPY 1		COPY 2																																	
SAMPLE COLLECTED BY (Name, Grade, AFSC)										SIGNATURE										AUTOVON																			
REASON FOR SUBMISSION										A-ACCIDENT/INCIDENT R-ROUTINE/PERIODIC										C-COMPLAINT N-NPOES										F-FOLLOWUP/CLEANUP O-OTHER (specify)									
BASE SAMPLE NUMBER										OEHL PID																													
ANALYSES REQUESTED (check appropriate blocks)																																							
GROUP A										GROUP T																													
Ammonia 00610										Hardness 00900										Residue, Settlesable 50086																			
Chemical Oxygen Demand 00340										Iron 01045										Residue, Volatile 00505																			
Kjeldahl Nitrogen 00625										Lead 01051										Silica 00953																			
Nitrate 00620										Magnesium 00927										Specific Conductance 00095																			
Nitrite 00615										Manganese 01035										Sulfate 00945																			
Oil & Grease 00560										Mercury 71900										Sulfite 00740																			
Organic Carbon 00680										Nickel 01067										Surfactants -MBAS 38260																			
Orthophosphate 00671										Potassium 00937										Turbidity 00076																			
Phosphorus, Total 00665										Selenium 01147										Tetrachloroethylene 34475																			
										Silver 01077										Trichloroethylene 34506																			
										Sodium 00929										1,1,1-Trichloroethane 39160																			
GROUP D										Thallium 01059										BHC Isomers 39340																			
Cyanide, Total 00720										Zinc 01092										Chlordane 39350																			
Cyanide, Free 00722																				DDT Isomers 39370																			
																				Dieldrin 39380																			
GROUP E										GROUP G																													
Phenols 32730										Acidity, Total 70508										Heptachlor 39410																			
										Alkalinity, Total 00410										Heptachlor Epoxide 39420																			
GROUP F										Alkalinity, Bicarbonate 00425										Lindane 39782																			
Antimony 01097										Bromide 71870										Methoxychlor 39480																			
Arsenic 01002										Carbon Dioxide 00405										Toxaphene 39400																			
Barium 01007										Chloride 00940										2,4-D 39730																			
Beryllium 01012										Color 00080										2,4,5-TP-Silvex 39760																			
Boron 01022										Fluoride 00951										2,4,5-T 39740																			
Cadmium 01027										Iodide 71865										Chlorine, Total 32060																			
Calcium 00916										Oder 00086										Dissolved Oxygen 32030																			
Chromium, Total 01034										Residue, Total 00500										pH 00400																			
Chromium VI 01032										Residue, Filterable TDS 70300										Temperature 00010																			
Copper 01042										Residue, Nonfilterable 00530										Sulfides 00745																			
COMMENTS																																							

AF FORM 2752
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Figure 2-3

INSTRUCTIONS FOR COMPLETING AF FORM 2752,
ENVIRONMENTAL SAMPLING DATA

The purpose of this form is to record environmental and drinking water sampling information. The form will be used for submitting environmental and drinking water samples (except radiological samples) to the USAF Occupational and Environmental Health Laboratory (USAF OEHL). Use AF Form 2753 for radiological sampling data.

1. Identification Data. Plastic embossed cards for recording identification data used in lieu of the following handwritten entries:
 - a. Sampling Site Identifier. Enter code for Sampling Site Identifier (see page 3).
 - b. Base. Enter name of base where sample is collected.
 - c. Sampling Site Description. Enter name of sampling site.
2. Date Collection Began. Enter date sample collection began (e.g., if Jan. 14, 1981, enter 81/01/14).
3. Time Collection Began. Enter time (24-hour clock) sample collection began.
4. Collection Method. Check whether sample was a grab sample or a composite sample. If a composite sample, enter number of hours from beginning to the completion of compositing.
5. Mail Reports To. Enter four-digit base code in small boxes (same code as first four digits of environmental identifier if same base). Enter mailing addresses where analysis results will be sent. Include unit designation, office symbol, base, state, and ZIP code.
6. Sample Collected By. Enter name (last name only), grade and AFSC of individual collecting sample.
7. Signature. Enter signature of individual collecting sample.
8. AUTOVON. Enter AUTOVON number of responsible individual who can answer questions from the laboratory concerning the sample.
9. Reasons for Submission. Enter code (in the box to the right of shaded "E") indicating reason for submitting sample.
10. Base Sample Number. Enter eight-digit coded base sample number for each sample. See pages 4-5.
11. OEHL PID. Leave blank.

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12. Analysis Requested. Check the block to the left of the analyses desired. For parameters not listed, enter parameter name and number in the blank spaces provided under the appropriate preservation group. Continue in the Comments Section if required.
13. On-Site Analyses. Enter results of any on-site analyses. For parameters not listed, enter parameter name, number, value and unit in the blank spaces provided.
14. Preserve a one liter (one quart) sample as shown in page 7 for each group in which an analysis is requested.
15. Submit one copy of the completed form in a waterproof envelope with the sample to USAF OEHL/SA, Building 140, Brooks AFB, TX 78235.

ensuring the collection of representative samples which are free from external contamination. Documentation and chain-of-custody procedures are also an important part of the sample collection QC effort, which include the following procedures:

- o Split-spoon and hand-auger sampling will be used to obtain representative samples from depth specific points, as opposed to sample cuttings which may originate at different points and be cross-contaminated. Analytical methods and detection limits are shown in Table 2-1.
- o During the drilling, the on-site geologist will ensure that cuttings coming to the surface on the auger flights are accurately described. This will serve as a general log to be confirmed by split-spoon samples.
- o The split-spoon or hand-auger sampler will be cleaned between each sampling to prevent cross-contamination of the samples in accordance with the safety plan.
- o All soil and waste samples will be collected in duplicate so that one can be analyzed by RAS and the other sent to OEHL.
- o In addition to the number of samples collected for analyses, the Radian hydrogeologist will also collect additional blind duplicate samples for QA purposes.
- o After sample collection, each sample will be logged into a master sample logbook (bound, paginated, laboratory notebook) which as a minimum indicates the date and time of sample collection, sample type, and initials of the person who collected the sample.

- o Soil samples will be chilled to 4°C for preservation until analyses.
- o Chain-of-custody forms Figure 2-1 will be used to document all Radian and USAF transfers of sample possession from initial preparation of the sample container to final disposition of the sample.
- o Samples shipped to OEHL require additional information which must accompany each sample. Figure 2-2 shows a list of information which could be provided on the sample label. Figure 2-3 shows Air Force Form 2752 that also needs to accompany the samples. Instructions for filling out AF Form 2752 are provided.

2.2 Analytical Quality Control for Soil Samples

In addition to the general sampling QC procedures described above, specific QC procedures and criteria are associated with various analyses and described below:

2.2.1 Metals

Heavy metals will be determined after acid extraction in accordance with EPA methods. Determination for these metals will involve both inductively coupled plasma emission spectrometry (ICPES) and atomic absorption spectroscopy (AAS). The metals to be analyzed, the analytical method for each metal, and EPA method references are presented in Table 2-1. Calibration and QC procedures for metals analyses are discussed below. These procedures are based upon EOA recommended procedures for the 200 Series Methods.

2.2.2 Calibration

Calibration curves will be generated daily for each metal species using a reagent blank and a minimum of three upscale concentrations. A calibration curve will be considered acceptable if the correlation coefficient, r , is ≥ 0.995 . A new calibration curve will be generated after analysis for no more than 20 samples. The new curve will be acceptable if it meets the linearity criterion above, and if the slope agrees with that of the previous curve within $\pm 10\%$.

3.0 QUALITY CONTROL PROCEDURES FOR GROUNDWATER SAMPLING AND ANALYSIS

During characterization of the Cannon AFB sites, monitoring well drilling and development will be conducted in one phase. Groundwater samples from the wells will be analyzed, at a minimum, for the constituents identified above. Quality control procedures for sample collection and analysis are described below.

3.1 Sampling Quality Control for Groundwater Samples

Quality control efforts associated with groundwater sampling are primarily procedural quality control activities which are an integral part of the monitoring well development and sampling methodology. These procedures focus upon ensuring that the samples are representative of the specified depth and as free as possible from external and/or cross-contamination. Examples of the QC aspects of the groundwater sampling effort include the following:

- o Initially, after completion, all wells will be pumped or bail-developed in order to remove all fines within the well and, to the extent possible, remove any drilling fluid, if used, which may have penetrated the formation during the drilling.

- o Groundwater levels will be measured to the nearest 0.01 foot and recorded before any groundwater disturbances.
- o All wells that are sampled will be evacuated with a dedicated submersible pump until the pH and specific conductance of the groundwater stabilizes or until three well volumes of water have been displaced.
- o Following evacuation, wells will be allowed to recover prior to sampling.
- o Samples must be transferred to sample jars with a minimum of agitation and disturbance in order to prevent stripping volatile organics from the water sample.
- o All sampling equipment will be thoroughly steam cleaned and/or replaced prior to the start of work and between wells.
- o Up-gradient wells will be sampled first in order to minimize possible transfer of any contaminants among the wells.
- o A sufficient volume of groundwater will be collected so that samples can be split with OEHL and a replicate of each retained for Radian Analytical Services for confirmation of initial analytical results or for subsequent detailed analyses.
- o All samples will be chilled to 4°C during transportation and storage.
- o In addition to the number of samples collected for analyses, the Radian hydrogeologist will also collect additional blind duplicate samples for QA purposes.

- o Field blanks will be prepared at the start and completion of the sampling operation and at several points during the course of sampling.

3.2 Chain of Custody

Chain of custody documentation must accompany all samples. The chain of custody records will contain, at a minimum, the following information:

- o Time, date, and location of sampling, and name of person performing sampling;
- o Number, depth, and type of sample;
- o Conditions encountered during well evacuation and water sample collection;
- o The signature of the responsible on-site hydrogeologist, and the time and date he relinquished the samples to either the field laboratory technician or the transporter who will deliver samples to the analytical laboratory.

3.3 Analytical Quality Control for Groundwater Samples

In addition to the general QC procedures described above, specific QC procedures and criteria are associated with groundwater analyses. These are described below.

3.4 Purgeable Aromatics

Purgeable aromatics in the groundwater samples will be determined by a purged-cryotrap GC/PID method similar in some respects to EPA Method 602.

Quality control procedures for this method are based on recommended procedures for Method 602 analyses.

3.5 Acceptability Tests

Section 8.2 of Method 602 describes the procedures for demonstrating ability to generate data of acceptable precision and accuracy. Briefly, this involves quadruplicate analyses of reagent water spiked with a "quality control check sample concentrate" and a "surrogate standard." Average percent recoveries and standard deviations are then calculated for each compound and compared to EPA values (Table 2, Method 602) to determine acceptability. These data should be available for inspection, but the acceptability test need not be repeated specifically for this project.

THE SAMPLING SITE IDENTIFIER

1. All environmental monitoring and drinking water sampling sites must be identified in a standardized manner. The sampling site identifier will be used for local identification purposes and will be the primary identifier for environmental data stored in a central Automatic Data Processing (ADP) repository.
2. The sampling site identifier is nine alphanumeric characters made up of the installation code, followed by the sampling site type code and the sampling location number.
 - a. Installation Code. The four-digit number now used for the film dosimetry program with a zero prefix (available from project monitor or base bioenvironmental engineer).
 - b. Sampling Site Type. A two-letter code to identify the source of the sample (see para 5 of this attachment for the complete list).
 - c. Sample Location Number. A three-digit number assigned locally.
3. The code formed when the three elements are combined is unique for a particular sampling point. If the sampling location is taken out of service, destroyed or no longer used, the code will not be reassigned to another sampling site nor used again.
4. The new code will look like this:

Installation Code	Sample Type	Sample Location
0 1 2 3	AB	4 5 6

5. Sample Type Codes:

<u>Sampling Site Type</u>	<u>Code</u>
Air	AO
Nonpotable water, source (effluent)	NS
Nonpotable water, process	NP
Nonpotable water, ambient	NA
Potable water, distribution system	PD
Potable water, ground water (untreated)	PG
Potable water, surface water (untreated)	PS
Potable water, other	PO
Solid	SO

CODED BASE SAMPLE NUMBER

This section contains accepted environmental sampling methods recommended by the USAF OEHL. The basis for any monitoring program rests upon information obtained from sampling. Improper sampling can negate even the most careful and accurate work performed by the remainder of the monitoring team. Therefore, the proper selection, collection, identification and shipment of environmental samples are paramount for a successful monitoring program. (General instructions for packaging and shipping samples are contained in Section V). Additional information can be obtained from:

USAF OEHL/ECA AUTOVON 240-2891 or (512) 536-2891
USAF OEHL/ECW AUTOVON 240-3305 or (512) 536-3305
USAF OEHL/ECE AUTOVON 240-3667 or (512) 536-3667

ASSIGNMENT OF BASE SAMPLE NUMBERS

Environmental samples that are collected at base level must be assigned a sample number, regardless of whether they are analyzed locally or at a central laboratory such as the USAF OEHL. This coded sample number will enable the analysis results to be ultimately stored in and retrieved from a central data repository. A sample number code consists of eight digits. The first two digits classify the sample as to the method and type of sample. The next two digits identify the locally assigned sample number, progressing in numerical sequence from sample number 0001 to sample number 9999. Sample number codes follow:

a. First 2 digits

(1) Digit #1 -

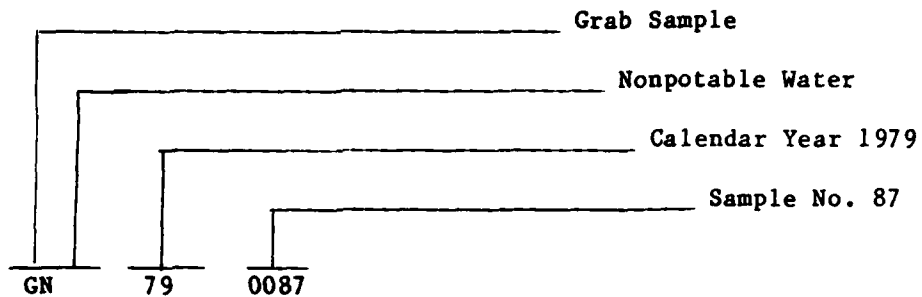
<u>Sample Method</u>	<u>Code</u>
Grab Sample	G
Composite Sample	C

(2) Digit #2 -

<u>Sample Method</u>	<u>Code</u>
Nonpotable	N
Potable Water	P
Residue (Incinerator Ash)	D
Sludge (Wet or Dry)	L
Soil	S
Unclassified	C
Vegetation	V

- b. Next 2 digits - Code for sample year using last two numbers of calendar year in which sample was taken. Example: Code for CY 1981 is 81.
- c. Last 4 digits - Code for locally assigned, numerically sequenced sample number. Example: Code for thirteenth sample taken during a calendar year is 0013.

Completed Base Sample Number. To illustrate a completed code, consider an environmental water sample taken to characterize storm water runoff. The sample was a grab sample taken from a storm drain. Eighty-six other samples had already been taken at the base that year (CY 1979). The sample would be:



USAF OEHL WORK CENTER CODES

Analysis of Industrial Hygiene Samples

1XX Liquid Media or Eluent for Tube Analysis

2XX Liquid Media or Eluent for Pesticide Type Analysis

3XX Eluent or Solvent for Metals Analysis

4XX Collection Media Colorimetric Analysis

5XX Media for Gravimetric/Physical Observations

6XX Media for Volumetric/Electrometric AN

7XX Media for Liquid Chromatography

9XX Special Modification

1XXX Special Analysis (Bulk Industrial Products)

9XXX Analysis of Biological Materials

1XXXX Analysis of Water or Soil (Environmental) Samples

10100-10199 A Preservation Group

10300-10399 D Preservation Group (Cyanides)

10400-10499 E Preservation Group (Phenols)

10500-10599 F Preservation Group (Metals)

10600-10699 G Preservation Group (Unpreserved)

10600 J Preservation Group (Sulfides)

10700-10799 H Preservation Group (Pesticides)

10800-10899 T Preservation Group (Trace Organics)

2XXXX Radioassay of Materials

PRESERVATION METHODS*

NOTE: A preservative must be added immediately after collection unless the sample is to be analyzed for dissolved materials. For dissolved analysis, filter as soon as possible, and then add the preservative.

GROUP	DESCRIPTION
A (A1XX)	Cool to 4°C; add sulfuric acid to pH <2; submit 1 liter in a polyethylene or glass container.
(A2XX)	Same as Group A1XX except that a separate 1 liter individual sample must be submitted in a glass container.
D (D1XX)	Cool to 4°C; add sodium hydroxide to pH >12; add sodium thiosulfate if residual chlorine exists in the sample. Submit 1 liter in a polyethylene or glass container.
E (E1XX)	Cool to 4°C; add sulfuric acid to pH <2; submit 1 liter in a polyethylene or glass container.
F (F1XX)	Add nitric acid to pH <2; submit 1 liter in a polyethylene or glass container.
(F2XX)	This group is for boron. Do not add nitric acid to this group--no preservative is necessary. Do not, under any circumstances, submit sample in a glass container.
G (G1XX)	Cool to 4°C; add no other preservative; submit 1 liter in a glass or polyethylene container.
(G3XX)	This group is for asbestos. No other preservative is necessary.
H (H1XX)	This sample is for sulfides. cool to 4°C; add 2 ml of a 22% zinc acetate solution per liter of sample. Submit 1 liter in a glass or polyethylene container.
T (T1XX)	Submit only in special containers obtained from USAF OEHL/SAN [AUTOVON 240-3626 or (512) 536-3626/Mr. Rodriguez].
(T4XX)	Cool to 4°C; add sodium thiosulfate if residual chlorine exists in sample; submit 1 liter in glass container with Teflon lined cap.

*These instructions supersede all previously issued preservation instructions.

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34205	ACENAPHTHENE	T4XX-10820	C	E610
34200	ACENAPHTHYLENE	T4XX-10820	C	E610
1001462AD	ACID EXTRACT. PRIORITY POLLUTANT	T4XX-10810	C	E625
00436	ACIDITY (MINERAL)	G1XX-10610	A	E305
70508	ACIDITY (TOTAL)	G1XX-10610	A	E305
34210	ACROLEIN	T4XX-10820	C	E603
34215	ACRYLONITRILE	T4XX-10820	C	E603
70312	AGGRESSIVE INDEX	G1XX-10000		
39330	ALDRIN	H1XX-10700	C	E608
00425	ALKALINITY (BICARBONATE)	G1XX-10610	A	A403
00430	ALKALINITY (CARBONATE)	G1XX-10610	A	A403
00420	ALKALINITY (HYDROXIDE)	G1XX-10610	A	A403
00415	ALKALINITY (PHENOLTHALEIN)	G1XX-10610	A	A403
00410	ALKALINITY (TOTAL)	G1XX-10610	A	A403
01106	ALUMINUM (DISSOLVED)	F1XX-10500	A	E202
01105	ALUMINUM (TOTAL)	F1XX-10500	A	E202
00610	AMMONIA (NITROGEN)	A1XX-10110	A	E350
34420	ANTHRACENE	T4XX-10820	C	E610
34556	DIBENZO(a,h)ANTHRACENE	T4XX-10820	C	E610
01095	ANTIMONY (DISSOLVED)	F1XX-10520	A	E204
01097	ANTIMONY (TOTAL)	F1XX-10510	A	E204
01000	ARSENIC (DISSOLVED)	F1XX-10520	A	E206

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
01002	ARSENIC (TOTAL)	F1XX-10510	A	E206
34225	ASBESTOS	G3XX-10000	C	C
01005	BARIUM (DISSOLVED)	F1XX-10520	A	E208
01007	BARIUM (TOTAL)	F1XX-10510	A	E208
1001463BE	BASE/NEUTRAL EXTR. PRI. POLLUT.	T4XX-10820	C	E625
34030	BENZENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E503
39120	BENZIDINE	T4XX-10820	C	E605
34526	BENZO(a)ANTHRACENE	T4XX-10820	C	E610
34230	BENZO(b)FLUORANTHENE	T4XX-10820	C	E610
34242	BENZO(k)FLUORANTHENE	T4XX-10820	C	E610
34247	BENZO(a)PYRENE	T4XX-10820	C	E610
34521	BENZO(ghi)PERYLENE	T4XX-10820	C	E610
01010	BERYLLIUM (DISSOLVED)	F1XX-10520	A	E210
01012	BERYLLIUM (TOTAL)	F1XX-10510	A	E210
39340	BHC ISOMERS	H1XX-10700	C	E608
39337	a-BHC	H1XX-10700	C	E608
39338	b-BHC	H1XX-10700	C	E608
34259	d-BHC	H1XX-10700	C	E608
00310	*BOD (BIOCHEMICAL OXYGEN DEMAND)	G1XX-10000	AX	
01020	BORON (DISSOLVED)	F1XX-10500	B	A404B
01022	BORON (TOTAL)	F1XX-10500	B	A404B

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
71870	BROMIDES	G1XX-10630	A	A405
32101	BROMODICHLOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
32104	BROMOFORM (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
34413	BROMOMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
01025	CADMIUM (DISSOLVED)	F1XX-10520	A	E213
01027	CADMIUM (TOTAL)	F1XX-10510	A	E213
00915	CALCIUM (DISSOLVED)	F1XX-10520	A	E215
00916	CALCIUM (TOTAL)	F1XX-10510	A	E215
00405	CARBON DIOXIDE (CALCULATED)	G1XX-10610	A	A406
32102	CARBON TETRACHLORIDE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
00340	CHEMICAL OXYGEN DEMAND (COD)	A1XX-10130	A	A508A
39350	CHLORDANE	H1XX-10700	C	A509
00940	CHLORIDES	G1XX-10630	A	E325
50064	*CHLORINE (FREE AVAILABLE)	G1XX-10000	X	.
50066	*CHLORINE (COMBINED AVAILABLE)	G1XX-10000	X	.
50060	*CHLORINE (TOTAL RESIDUAL)	G1XX-10000	X	.
34301	CHLORO BENZENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E601
32106	CHLOROFORM (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10800	D	E601

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34311	CHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34273	BIS(2-CHLOROETHYL) ETHER	T4XX-10820	C	E611
34278	BIS(2-CHLOROETHOXY)METHANE	T4XX-10820	C	E611
34283	BIS(2-CHLOROISOPROPYL)ETHER	T4XX-10820	C	E611
34576	CHLOROETHYLVINYL ETHER (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E602
34418	CHLOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E602
34518	2-CHLORONAPHTHALENE	T4XX-10820	C	E612
01030	CHROMIUM (DISSOLVED)	F1XX-10520	A	E218
01032	CHROMIUM (HEXAVALENT)	F1XX-10510	AX	A312B
01034	CHROMIUM (TOTAL)	F1XX-10510	A	E218
34320	CHRYSENE	T4XX-10820	C	E610
01035	COBALT (DISSOLVED)	F1XX-10500	A	E219
01037	COBALT (TOTAL)	F1XX-10500	A	E219
31501	*COLIFORM (TOTAL)	G1XX-10000	X	
00080	COLOR	G1XX-10620	A	E110
01040	COPPER (DISSOLVED)	F1XX-10520	A	E220
01042	COPPER (TOTAL)	F1XX-10510	A	E220
00720	CYANIDES (TOTAL)	D1XX-10300	A	A412D
00722	CYANIDES (AMENABLE TO CHLORINE)	D1XX-10300	A	A412D
39730	2,4-D	H1XX-10700	C	A509

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
39310	4,4'-DDD	H1XX-10700	C	E608
39320	4,4'-DDE	H1XX-10700	C	E608
39300	4,4'-DDT	H1XX-10700	C	E608
39370	DDT ISOMERS	H1XX-10700	C	A509
39570	DIAZINON	H2XX-10700	C	A509
32105	DIBROMOCHLOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
34536	1,2-DICHLOROBENZENE (ORTHO) (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
34566	1,3-DICHLOROBENZENE (META) (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
34571	1,4-DICHLOROBENZENE (PARA) (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
34631	3,3'-DICHLOROBENZIDENE	T4XX-10820	C	E605
34668	DICHLORODIFLUOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34496	1,1-DICHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
32103	1,2-DICHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34501	1,1-DICHLOROETHENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34546	1,2-DICHLOROETHYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34423	DICHLOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34451	1,2-DICHLOROPROPANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34704	CIS-1,3-DICHLOROPROPENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34699	TRANS-1,3-DICHLOROPROPENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
39380	DIELDRIN	H1XX-10700	C	E608
34611	2,4-DINITROTOLUENE	T4XX-10820	C	E609
34626	2,6-DINITROTOLUENE	T4XX-10820	C	E609
00300 *	*DISSOLVED OXYGEN	G1XX-10000	CX	
34641	DURBAN	H1XX-10700	C	E611
34361	ENDOSULFAN I	H1XX-10700	C	E608
34356	ENDOSULFAN II	H1XX-10700	C	E608
34351	ENDOSULFAN SULFATE	H1XX-10700	C	E608
39390	ENDRIN	H1XX-10700	C	E608
34366	ENDRIN ALDEHYDE	H1XX-10700	C	E608
34371	ETHYLBENZENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
31613	*FECAL COLIFORM	G1XX-10000	X	
31673	*FECAL STREPTOCOCCI	G1XX-10000	X	
34376	FLUOROANTHENE	T4XX-10820	C	E610
34381	FLUORENE	T4XX-10820	C	E610
00951	FLUORIDES	G1XX-10630	B	E340
38260	FOAMING AGENTS (SEE SURFACTANTS)	G1XX-10620	AX	E425

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
00901	HARDNESS (CARBONATE)	G1XX-10600	A	A314A
00902	HARDNESS (NONCARBONATE)	G1XX-10600		
00900	HARDNESS (TOTAL)	F1XX-10510	A	A314A
39410	HEPTACHLOR	H1XX-10700	C	A509
39420	HEPTACHLOR EPOXIDE	H1XX-10700	C	E608
39700	HEXACHLOROBENZENE	T4XX-10820	C	E608
34391	HEXACHLOROBUTADIENE	T4XX-10820	C	E612
34386	HEXACHLOROCYCLOPENTADIENE	T4XX-10820	C	E612
34396	HEXACHLOROETHANE	T4XX-10820	C	E612
00400	*HYDROGEN ION (pH)	G1XX-10000	AX	E150
34403	INDENO(1,3-CD)PYRENE	T4XX-10820	C	E610
71865	IODIDES	G1XX-10630	AX	E345
01046	IRON (DISSOLVED)	F1XX-10520	A	E236
01045	IRON (TOTAL)	F1XX-10510	A	E236
34408	ISOPHORONE	T4XX-10820	C	E609
00625	KJELDAHL NITROGEN (TOTAL)	A1XX-10110	A	E351
70311	LANGLIER INDEX	G1XX-10000	A	A203
01049	LEAD (DISSOLVED)	F1XX-10520	A	E239
01051	LEAD (TOTAL)	F1XX-10510	A	E239
39782	LINDANE	H1XX-10700	C	E608
00925	MAGNESIUM (DISSOLVED)	F1XX-10520	A	E242
00927	MAGNESIUM (TOTAL)	F1XX-10510	A	E242

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
01056	MANGANESE (DISSOLVED)	F1XX-10520	A	E243
01055	MANGANESE (TOTAL)	F1XX-10510	A	E243
1001465MT	MAXIMUM TRIHALOMETHANE POTENTIAL (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10830	E	E501
38260	MBAS (SEE SURFACTANTS)	G1XX-10620	AX	E425
71890	MERCURY (DISSOLVED)	F1XX-10520	A	E245
71900	MERCURY (TOTAL)	F1XX-10510	A	E245
39480	METHOXYCHLOR	H1XX-10700	C	E608
34423	METHYLENE CHLORIDE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10800	D	E601
81595	METHYL ETHYL KETONE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	D	E503
81596	METHYL ISOBUTYL KETONE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	D	E503
01060	MOLYBDENUM (DISSOLVED)	F1XX-10500	A	E246
01062	MOLYBDENUM (TOTAL)	F1XX-10500	A	E246
34301	MONOCHLOROBENZENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10800	F	E602
34696	NAPHTHALENE	T4XX-10820	C	E610
01065	NICKEL (DISSOLVED)	F1XX-10520	A	E249
01067	NICKEL (TOTAL)	F1XX-10510	A	E249
00620	NITRATES (AS NITROGEN)	A1XX-10110	AX	E353
00630	NITRATES-NITRITES	A1XX-10100	AX	E353
00615	NITRITES (AS NITROGEN)	A1XX-10110	AX	E353

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34447	NITROBENZENE	T4XX-10820	C	E609
00625	NITROGEN (TOTAL KJELDAHL)	A1XX-10110	A	E351
34438	N-NITROSODIMETHYLAMINE	T4XX-10820	C	E607
34428	N-NITROSODI-N-PROPYLAMINE	T4XX-10820	C	E607
34433	N-NITROSODIPHENYLAMINE	T4XX-10820	C	E607
00086	*ODOR	G1XX-10620	X	
00560	OIL & GREASE	A2XX-10120	CJ	E413
00680	ORGANIC CARBON	A1XX-10130	A	E415
00671	ORTHO PHOSPHATE (DISSOLVED)	A1XX-10110	AX	E355
00300	*OXYGEN (DISSOLVED)	G1XX-10000	X	
39516	PCB (POLYCHLORINATED BIPHENYLS)	T4XX-10850	C	E602
00400	*pH (HYDROGEN ION)	G1XX-10000	X	
34461	PHENANTHRENE	T4XX-10820	C	E610
32730	PHENOLS	E1XX-10400	A	E420
34452	4-CHLORO-3-METHYLPHENOL	T4XX-10810	C	E604
34586	2-CHLOROPHENOL	T4XX-10810	C	E604
34601	2,4-DICHLOROPHENOL	T4XX-10810	C	E604
34606	2,4-DIMETHYLPHENOL	T4XX-10810	C	E604
34606	2,4-DINITROPHENOL	T4XX-10810	C	E604
34657	2-METHYL-4,6-DINITROPHENOL	T4XX-10810	C	E604
34591	2-NITROPHENOL	T4XX-10810	C	E604
34646	4-NITROPHENOL	T4XX-10810	C	E604

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
34694	PENTACHLOROPHENOL	T4XX-10810	C	E604
34621	2,4,6-TRICHLOROPHENOL	T4XX-10810	C	E604
34636	4-BROMOPHENYL PHENYLETHER	T4XX-10820	C	E611
34641	4-CHLOROPHENYL PHENYLETHER	T4XX-10820	C	E611
00671	PHOSPHATES ORTHO (DISSOLVED)	A1XX-10110	AX	E365
70507	PHOSPHATES ORTHO (TOTAL)	A1XX-10100	A	E365
00665	PHOSPHORUS (TOTAL)	A1XX-10110	A	E365
1000069PH	PHTHALATE ESTER SCREEN	T4XX-10820	C	E606
39100	BIS(2-ETHYLHEXYL)PHTHALATE	T4XX-10820	C	E606
34292	BUTYLBENZYL PHTHALATE	T4XX-10820	C	E606
39110	DI-N-BUTYL PHTHALATE	T4XX-10820	C	E606
34336	DIETHYL PHTHALATE	T4XX-10820	C	E606
34341	DIMETHYL PHTHALATE	T4XX-10820	C	E606
34596	DI-N-OCTYL PHTHALATE	T4XX-10820	C	E606
31751	*PLATE COUNT, TOTAL	G1XX-10000	X	
00935	POTASSIUM (DISSOLVED)	F1XX-10520	A	E258
00937	POTASSIUM (TOTAL)	F1XX-10510	A	E258
1001462AE	PRIORITY POLLUTANT-ACID EXTR.	T4XX-10810	C	E625
1001463BE	PRIORITY POLLUTANT - BASE/NEUT. EXT	T4XX-10820	C	E625
1001465MT	PRIORITY POLLUTANT - MAX. TRIHALO. PO (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10830	E	E501
82080	PRIORITY POLLUTANT - TOT. TRIHALOMET (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10840	D	E501

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
1001461PA	PRIORITY POLLUTANT - VOL. AROMATICS (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E602
1001460PH	PRIORITY POLLUTANT-VOLATILE HALOCAR (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
71220	*PSEUDOMONAS, AERUGINOSA	G1XX-10000	X	
34469	PYRENE	T4XX-10820	C	E610
00500	RESIDUE (TOTAL)	G1XX-10642	A	E160
70300	RESIDUE FILTERABLE (TDS)	G1XX-10640	AX	E160
00530	RESIDUE NON-FILTERABLE (SS)	G1XX-10640	AX	E160
50086	RESIDUE (SETTLEABLE)	G1XX-10600	A	E160
00520	RESIDUE (VOLATILE FILTERABLE)	G1XX-10600	AX	E160
00535	RESIDUE (VOLATILE NON-FILTERABLE)	G1XX-10600	AX	E160
00505	RESIDUE VOLATILE (TOTAL)	G1XX-10642	AX	E160
00480	SALINITY	G1XX-10600	A	A210A
01145	SELENIUM (DISSOLVED)	F1XX-10520	A	E270
01147	SELENIUM (TOTAL)	F1XX-10510	A	E270
39750	SEVIN	H2XX-10700	C	A509
00955	SILICA	G1XX-10600	B	E370
01075	SILVER (DISSOLVED)	F1XX-10520	A	E272
01077	SILVER (TOTAL)	F1XX-10510	A	E272
39760	SILVEX (2,4,5-TP)	H1XX-10700	C	A509
00930	SODIUM (DISSOLVED)	F1XX-10520	A	E273
00929	SODIUM (TOTAL)	F1XX-10510	A	E273

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
00095	SPECIFIC CONDUCTANCE	G1XX-10620	A	E120
80110	SPECIFIC GRAVITY	G1XX-10600	A	A213
00945	SULFATES	G1XX-10630	A	E375
00745	SULFIDES	J1XX-10600	AX	E376
00740	SULFITES	G1XX-10600	AX	E377
38260	SURFACTANTS (MBAS AS LAS)	G1XX-10620	AX	E425
39740	2,4,5-T	H1XX-10700	C	A509
32240	TANNINS & LIGNINS	G1XX-10600	A	A513
00010	*TEMPERATURE (°C)	G1XX-10000	X	
34516	TETRACHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34475	TETRACHLOROETHYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
00730	THIOCYANATES	D1XX-10300	A	A412K
01057	THALLIUM (DISSOLVED)	F1XX-10520	A	E279
01059	THALLIUM (TOTAL)	F1XX-10510	A	E279
01100	TIN (DISSOLVED)	F1XX-10500	A	E282
01102	TIN (TOTAL)	F1XX-10500	A	E282
01150	TITANIUM (DISSOLVED)	F1XX-10500	A	E283
34506	1,1,1-TRICHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601
34511	1,1,2-TRICHLOROETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E601

RECOMMENDED ENVIRONMENTAL SAMPLING METHODS

STORET #	NAME	PRESERVATIVE WORK CENTER	NOTES	REF.
39180	TRICHLOROETHYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
34488	TRICHLOROFLUOROMETHANE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
82080	TRICHALOMETHANES (TOTAL) (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10840	D	E501
00076	TURBIDITY	G1XX-10620	AX	E130
39175	VINYL CHLORIDE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10860	D	E501
81710	M-XYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E503
81711	O-XYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E503
78132	P-XYLENE (OBTAIN SPECIAL CONTAINER FROM LAB)	T1XX-10850	F	E503
01090	ZINC (DISSOLVED)	F1XX-10500	A	E289
01092	ZINC (TOTAL)	F1XX-10510	A	E289

2.2.2 Calibration

Calibration curves will be generated daily for each metal species using a reagent blank and a minimum of three upscale concentrations. A calibration curve will be considered acceptable if the correlation coefficient, r , is ≥ 0.995 . A new calibration curve will be generated after analysis for no more than 20 samples. The new curve will be acceptable if it meets the linearity criterion above, and if the slope agrees with that of the previous curve within $\pm 10\%$.

3.0 QUALITY CONTROL PROCEDURES FOR GROUNDWATER SAMPLING AND ANALYSIS

During characterization of the Cannon AFB sites, monitoring well drilling and development will be conducted in one phase. Groundwater samples from the wells will be analyzed, at a minimum, for the constituents identified above. Quality control procedures for sample collection and analysis are described below.

3.1 Sampling Quality Control for Groundwater Samples

Quality control efforts associated with groundwater sampling are primarily procedural quality control activities which are an integral part of the monitoring well development and sampling methodology. These procedures focus upon ensuring that the samples are representative of the specified depth and as free as possible from external and/or cross-contamination. Examples of the QC aspects of the groundwater sampling effort include the following:

- o Initially, after completion, all wells will be pumped or bail-developed in order to remove all fines within the well and, to the extent possible, remove any drilling fluid, if used, which may have penetrated the formation during the drilling.

- o Groundwater levels will be measured to the nearest 0.01 foot and recorded before any groundwater disturbances.
- o All wells that are sampled will be evacuated with a dedicated submersible pump until the pH and specific conductance of the groundwater stabilizes or until three well volumes of water have been displaced.
- o Following evacuation, wells will be allowed to recover prior to sampling.
- o Samples must be transferred to sample jars with a minimum of agitation and disturbance in order to prevent stripping volatile organics from the water sample.
- o All sampling equipment will be thoroughly cleaned and/or replaced prior to the start of work and between wells.
- o Upgradient wells will be sampled first in order to minimize possible transfer of any contaminants among the wells.
- o A sufficient volume of groundwater will be collected so that samples can be split with OEHL and a replicate of each retained for Radian Analytical Services for confirmation of initial analytical results or for subsequent detailed analyses.
- o All samples will be chilled to 4°C during transportation and storage.
- o In addition to the number of samples collected for analyses, the Radian hydrogeologist will also collect additional blind duplicate samples for QA purposes.

- Field blanks will be prepared at the start and completion of the sampling operation and at several points during the course of sampling.

3.2 Chain of Custody

Chain of custody documentation must accompany all samples. The chain of custody records will contain, at a minimum, the following information:

- Time, date, and location of sampling, and name of person performing sampling;
- Number, depth, and type of sample;
- Conditions encountered during well evacuation and water sample collection;
- The signature of the responsible on-site hydrogeologist, and the time and date he relinquished the samples to either the field laboratory technician or the transporter who will deliver samples to the analytical laboratory.

3.3 Analytical Quality Control for Groundwater Samples

In addition to the general QC procedures described above, specific QC procedures and criteria are associated with groundwater analyses. These are described below.

3.4 Purgeable Aromatics

Purgeable aromatics in the groundwater samples will be determined by a purged-cryotrap GC/PID method similar in some respects to EPA Method 602.

Quality control procedures for this method are based on recommended procedures for Method 602 analyses.

3.5 Acceptability Tests

Section 8.2 of Method 602 describes the procedures for demonstrating ability to generate data of acceptable precision and accuracy. Briefly, this involves quadruplicate analyses of reagent water spiked with a "quality control check sample concentrate" and a "surrogate standard." Average percent recoveries and standard deviations are then calculated for each compound and compared to EPA values (Table 2, Method 602) to determine acceptability. These data should be available for inspection, but the acceptability test need not be repeated specifically for this project.

THE QUALITY ASSURANCE/QUALITY CONTROL PROGRAM
FOR RADIAN ANALYTICAL SERVICES

Radian Analytical Services' (RAS) objective is to provide high quality chemical analyses to all clients regardless of the size of the analytical task. To aid in achieving this goal, a strong quality assurance program and rigid quality control practices are integral parts of all analyses. This document describes these quality assurance/quality control protocols for the Radian Analytical Services laboratories.

The basic quality control program includes procedures for sample handling, calibration, spiking and replicate analyses, analysis of QC test samples, equipment maintenance, and supplies control. These procedures can be integrated with a client's additional requirements, such as spiking studies, analysis of replicate samples, linearity determinations, and stability studies.

The quality assurance program consists of the frequent submission of blind QA samples, duplicates, and spiked sample splits. Also included are personnel training, analytical methodologies, sample control procedures, data handling, and equipment maintenance and calibrations.

1.0 QA Organization/Policy

The objective of Radian's quality assurance/quality control program is to assure, assess, and document the precision, accuracy, and adequacy of data obtained from chemical analysis and to assure the technical accuracy of the results obtained for all samples.

Radian has organized the quality assurance function within the company to allow complete independence of program review. Radian's Quality Assurance Director reports directly to the Vice President of the Technical Staff. This position provides independent reviews at all levels of the technical staff and laboratory organization and allows immediate access to Radian's top management on QA-related matters.

The QA Director's involvement may be limited to a review of quality control practices or as extensive as active development and implementation of quality control procedures and statistical data analysis. The QA Director may be asked to contribute expertise and assistance when a need is perceived by either the client, the technical staff, or the management staff.

Because of the large number of samples analyzed by RAS, a QA coordinator has been assigned to monitor and maintain an effective QA/QC program for these laboratories. The RAS Quality Assurance Coordinator, directly responsible to the Corporate QA Director, serves as an independent auditor of all RAS laboratories. The responsibilities of the RAS QA Coordinator are as follows:

- Monitor QA/QC within RAS laboratories,
- Supervise the preparation of blind audit samples,

- inform the Director of RAS and the corporate QA Director of quality assurance problems,
- summarize and report QA activities in the laboratories,
- document all QA and QC procedures within RAS,
- act as liaison between the corporate QA Director and RAS,
- provide QA data to the corporate QA Director for inclusion in the corporate QA reports.

The RAS laboratory managers function as the quality control coordinators in each particular analytical area. Their efforts are coordinated and monitored by the QA Coordinator.

Quality control coordinators serve as a focal point for all QC activities pertaining to each RAS laboratory. They work as a committee coordinated by the RAS Quality Assurance Coordinator. Their activities include the following:

- monitor the QA/QC activities of the laboratory area,
- inform the Director of Analytical Services and the QA coordinator of QC problems and needs.
- summarize, document, and report quality control activities and data generated in the laboratory,

- provide documentation of all QC procedures in the laboratory,
- maintains summaries of QC activities and data in a form suitable for client review upon request.

2.0 Quality Control for Laboratory Analyses

Radian Analytical Services has developed and implemented quality control procedures for all of the analyses performed in the laboratory. The laboratory quality control program provides an effective and efficient laboratory protocol for QC regardless of the size or scope of the analytical requirements. Approved analytical methods are used whenever available. When approved methods are not available, a method is developed by the Radian technical staff, and a technical note written describing the method. The quality control procedures are designed to insure that the standard operating procedures and quality control protocols are being followed and accurate results are obtained.

The general quality control program utilized in each laboratory includes consideration of the following areas:

- personnel training and certification,
- analytical methodology documentation,
- sample handling and control,
- laboratory facilities and equipment,
- calibration and standards,
- data handling and documentation,
- quality control check samples,

The general approach to quality control, in each of these areas is discussed in the remainder of this section.

2.1 Personnel Training and Certification

The successful implementation of any QA/QC program is determined by the training and dedication of the laboratory personnel. The quality and consistency of data should be independent of the analyst. With the proper training and supervision, an analyst will be able to obtain quality data by the use of proven methodology. Periodic assessment of training requirements and certification are performed to maintain a high level of laboratory awareness.

The training and certification methods employed in the RAS laboratories are briefly described below:

- study of laboratory standard operating procedures,
- study of QA manual,
- observation of experienced operators/analysts,
- study of operating manuals,
- instruction by the laboratory manager on all aspects of the analysis,
- perform the analysis under the direct supervision of the laboratory manager,
- perform analysis under supervision of experienced personnel,
- analysis of blind QC samples prepared by laboratory QC coordinator,
- participation in in-house seminars on laboratory methods and procedures.

Test Specific Training:

Each specific test performed in the RAS laboratories involves procedures which may be unique. The steps involved in training an employee are:

- Instruction by the Laboratory Manager on all aspects of the analysis,
- Observation of experienced operators/analysts,
- Perform the analysis under supervision of the laboratory manager,
- Perform analysis of QA samples submitted by the QA coordinator, and
- Participation in in-house seminars on laboratory methods and procedures.

The following table is to be completed by dating and initialing by the employee and Laboratory Manager upon completion of each step.

<u>Method</u>	<u>Instruction</u>	<u>Observation</u>	<u>Perform the Analysis</u>	<u>Analysis of QA samples</u>	<u>Seminars</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Figure 2-1. (Cont'd)

All RAS personnel must complete a quality control training program. This system includes motivation toward producing data of acceptable quality and involves "practice work" by new employees. New personnel are made aware of the quality standards established by RAS and the reasons for those standards. They are made aware of the various ways of achieving and maintaining quality data. After an employee has been trained to use a method and the work validated by the laboratory manager, the employee is certified to perform the analysis. As these people progress to higher degrees of proficiency, their accomplishments are reviewed and then documented. Documentation of proficiency training is maintained by the QC Coordinator for each laboratory technician using the two-page form shown in Figure 2-1.

2.2 Analytical Methodologies

All analytical procedures followed in the RAS laboratories are documented in a methods manual for the specific laboratory. A set of standard operating procedures (SOP) has been established for each analysis to insure consistency. Most methods used are directly from an approved analytical manual, e.g., EPA methods, APHA Standard Methods for Water and Wastewater, ASTM, etc.

Methodologies may contain the following information:

- method title,
- scope of method,
- summary of interferences, and applications,
- concentration ranges and detection limits,
- safety precautions,
- required equipment and materials,
- standardization directions,
- detailed analytical procedure,
- calculations, with examples,
- reporting method,
- precision and accuracy statement,
- references.

2.3 Sample Control and Record Keeping

The Radian Analytical Services Sample Control Center is a controlled access area. Only employees of the Sample Control Center have access to sample receiving, sample storage, documentation files, and the computer terminals. Analysts check out samples under the supervision of the sample control personnel. All samples are stored in locked storage areas. Sample tracking is maintained by a computerized laboratory management system and a sample checkout logbook. The RAS Sacramento laboratory is linked to the central processing unit of the computer in Austin via a dedicated phone line. This insures that the laboratories are in constant communication. All sample information and data entries can be immediately accessed at either location.

Detailed record keeping and control of samples are essential for effective laboratory operation. All samples received for analysis in the Radian Analytical Service laboratories are processed through the Sample and Analysis Management System (SAM). Radian Corporation's SAM is a software and hardware system for controlling and handling information for the analytical laboratory. SAM provides a dynamic, easy-to-use method for tracking, scheduling, reporting, and laboratory management. The system has been designed to accommodate and promote good laboratory management practices by providing high visibility of the information laboratory managers need to make good decisions regarding schedules and priority. The system is designed around a Data General Nova-IV computer with a 64K-byte memory. It also includes a 65M-byte disk drive and a line printer with plotting capabilities. Data is entered via a TEC terminal and CRT. All data stored on the disk is backed up on magnetic tape to prevent loss in the event of a system malfunction. The system is designed so that an individual designated as the principal operator can process the required paperwork for a large laboratory with little difficulty. The approach centralizes information input and data retrieval, and provides the mechanism for organized, up-to-date laboratory performance monitoring.

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SAM maintains complete client information files, generates laboratory status reports, flags sample analyses which are overdue, accepts analysis results manually or automatically, and generates reports and invoices.

The Sample Control Center and SAM have six basic functions:

- sample receipt and logging,
- sample storage and maintenance of sample integrity,
- laboratory status reporting,
- document control,
- data compilation and reporting, and
- invoicing

In order to assure the integrity of a sample and the accompanying documentation, a security plan has been established. This plan consists of three parts:

- chain of custody,
- secured refrigerated storage, and
- document control.

The progression of samples and documentation through the Sample Control Center and the analytical laboratories is presented in Figure 2-2. Detailed descriptions of each sample control function are presented below:

- Samples are received from the commercial carrier at Radian's shipping and receiving facilities by the receiving clerk.
- Within one hour of arrival, the samples are accepted by RAS sample control personnel.

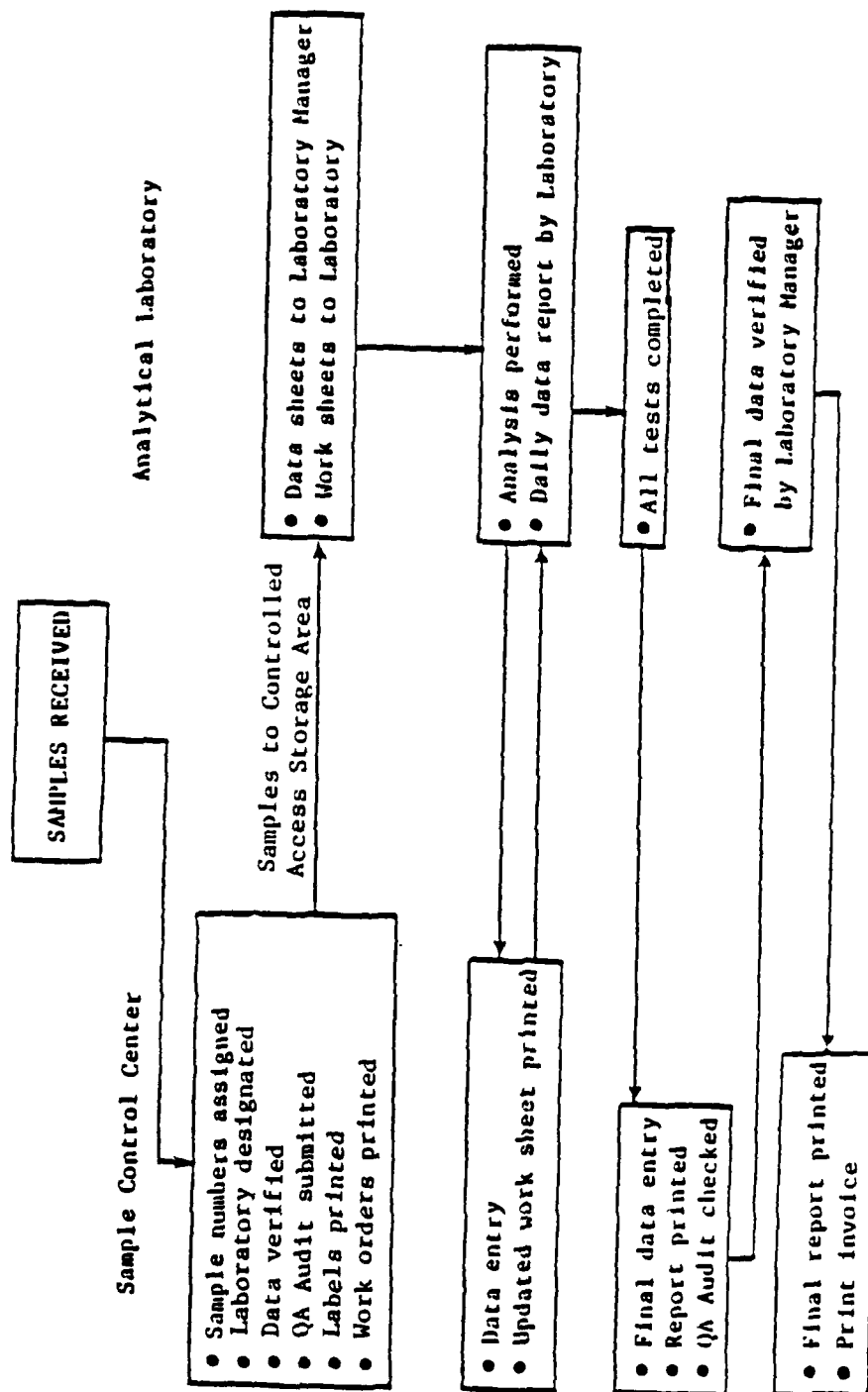


Figure 2-2. SAM Laboratory Management System

- All shipping containers and security seals, when appropriate, are inspected for physical damage or evidence of tampering.
- The samples are unpacked in the sample receiving area by the RAS sample custodian. The method of shipment, shipping container integrity, condition of samples, the number of samples/ container, integrity of the security seal, and accompanying documentation are noted. Sample identification is verified against custody documents. The enclosed chain-of-custody forms, Figure 2-3, when required, are completed and filed with the shipping and receiving documentation. In the event that peculiarities are noted, the project officer or client is immediately advised of the irregularity.
- Samples are logged into a bound sample logbook, Figure 2-4. Again, sample identity is verified. All discrepancies are noted in the logbook.
- The handwritten logbook and all documentation are transferred to the Sample Control Center.
- The samples are logged into the SAM system. Each batch of samples is assigned a consecutive work order number by the system. Analytical requirements for each sample are entered into the computer.
- Hard copy of the work order and other information is printed and filed with the received documentation in the Sample Control Center.
- Labels are printed and secured to each sample. Label information includes sample number, identification, storage location, and analytical requirements.

CHAIN OF CUSTODY RECORD

Field Sample No. _____

Company Sampled/Address _____

Sample Point Description _____

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name _____ Date/Time Sampled _____

Amount of Sample Collected _____

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ - 10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Lab No. _____

Company _____	Quoted \$ _____	Contact _____
Facility _____	Sample \$ _____	Received _____
_____	Misc \$ _____	Date Due _____
Rep _____	Total \$ _____	Samples _____
Phone _____	Inv by (CPR) _____	Keep for _____
Report _____	% Surcharge _____	Keep til _____
to _____	% Disc: All _____	Disp (RD) _____

_____	# Reports _____	# Invoices _____
Attn _____	Work ID _____	
_____	Taken _____	
Inv _____	Trans _____	
to _____	Type _____	
_____	Condition _____	
_____	Comments: _____	
Attn _____		
P.O. # _____		
Expires _____		

Location: _____

[illegible]

Figure 2-4. Sample Log Sheet

- Data sheets and work sheets are printed for each batch of samples and distributed to the appropriate laboratory managers. The work sheets list sample numbers, sample identification, storage location, and analytical requirements. Data sheets are for results and contain only the parameters to be determined by a given laboratory.
- Following sample logging, the samples are placed in the designated locked storage area.
- Subsequent sample custody is documented and all transactions witnessed by sample control personnel.
- The analyst retrieves the samples from the Sample Control Center by sample number and storage location.
- The Sample checkout log (Figure 2-5) is completed by the analyst, noting the laboratory to which the sample is being removed.
- After analysis, or when the required aliquot is removed, the sample is returned to the Sample Control Center and return is noted in the sample checkout log.
- The sample is returned to the designated storage location.
- When requested, addition chain-of-custody documentation can be provided using a SAM-generated document (Figure 2-6). This document can be retained by sample control to provide a more easily retrievable record of sample custody within the analytical laboratory.
- The sample is stored until the assigned time or written permission is given to either properly dispose of or return the sample to the client.

[illegible]

Figure 2-5. Sample Checkout Log

LAB # 83-02-A67

KEEP: 05/09/83

- All documentation, including shipping documents, field sampling documents, computer-generated log sheets, chain-of-custody forms, laboratory data sheets, final computer reports, and other documents, are maintained in the sample control area. All reports are kept in locked filing cabinets. As with the sample storage area, the document storage area is limited-access.

All storage areas are within the Sample Control Center and are locked when not in use. Access to the storage area is limited to sample control personnel or other RAS employees accompanied by sample control personnel. There are four storage locations that are used depending on the sample and the required analyses. They are:

- ambient storage for samples that do not require refrigeration,
- 4°C storage for most samples requiring water quality analysis and extractable organics,
- 4°C storage for samples requiring volatile organic analysis, and
- -20°C storage for extracts and samples that require freezing.

A temperature log is maintained to monitor the cold storage facilities.

2.4 Laboratory Facilities and Equipment

A clean well-lighted, and well maintained laboratory is essential for accurate analytical results. Each laboratory is well-lighted, air conditioned and equipped with chemical fume hoods. Instrumentation that may emit noxious odors is vented externally.

Quality Control of Equipment and Supplies

Each laboratory QC program includes detailed requirements for equipment and supplies. Reagents, solvents, and standards with specific levels of purity are used as specified by the analytical protocol. Specific GC column materials, glassware and sample handling equipment are also specified. The quality control procedures for equipment and supplies generally include the following items:

- operator checklists for required supplies,
- documentation and reporting of all deviations from specified instrument performance,
- procedures for testing for purity of reagents,
- tolerances for calibrated glassware where applicable,
- monitoring of refrigerated storage space,
- maintenance logbooks,
- service contracts on analytical instrumentation.

Quality control procedures during sample preparation include the preparation of reagent or solvent blanks. Additional quality control techniques implemented in sample preparation include:

- deionized water piped into all laboratories, monitored daily,
- purchasing high purity distilled-in-glass solvents in large quantities from a single lot,

- use of Ultrex acids in trace metal digestion,
- cleaning of organic glassware with chromic acid or firing in a kiln at 450°C,
- cleaning of trace metal glassware with nitric acid,
- use of organic-free water prepared at Radian by distillation over alkaline permanganate under nitrogen atmosphere in all-glass still,
- use of volatile-free water prepared by purging organic-free water with nitrogen,
- sample preparation performed by experienced technical personnel under the supervision of senior level analysts.

2.5 Quality Control for Standards and Calibration

The quality of all test results is greatly impacted by the calibration procedures used. Calibration procedures and standards should be specified for all equipment and supplies used in the test procedure. Traceability to common standards is essential for test procedures to be used in multiple laboratories. Quality control procedures for standards and calibrations include the following considerations:

- written, detailed calibration instructions,
- preparation procedures for secondary standards, when applicable,
- requirements for frequency of calibration,
- recordkeeping of all calibrations and standards used,

- quality control charts for recording results from multiple calibrations,
- evaluation of internal standards, and
- tolerances for calibration requirements.

All calibration standards are prepared from NBS-traceable, EPA certified, or primary standard materials. Daily logs are maintained to monitor instrument response to a given standard.

Quality Control Test Samples

Routine quality control samples to be analyzed concurrently with client samples are a significant portion of the RAS laboratory quality control programs. The purpose of these checks is twofold: 1) to assure that samples being analyzed satisfy predetermined standards of accuracy, and 2) to measure and document achieved levels of accuracy and precision.

There are many different types of quality control samples which could be used for these purposes. The correct combination of these will depend on the complexity of the test method and the desired degree of accuracy. The following quality control parameters are general considerations for Radian's quality control for test methods.

Interferences

The analytical results of a test method might be affected by interferences from the glassware, solvents, reagents, or the sample matrix. Blank samples which are subjected to conditions similar to samples being analyzed are used to evaluate the purity of laboratory reagents. The frequency of blank analysis is method dependent. For example, a laboratory or field blank is analyzed after each GC/MS volatile organic analysis with high levels for any of the pollutants. Ten percent of the samples from a

given sample batch are spiked with a known standard. Spike recovery data are calculated to determine matrix interference.

Precision

The precision or repeatability of a test method is required for proper interpretation and weighting of the data. Replicate samples or standards are used to determine the precision on a regular basis. The precision of multiple analyses are compared against predetermined precision limits to determine their acceptability. The precision is usually reported as a standard deviation or repeatability statistic and often depends on the concentration of the parameters analyzed. Replicate analyses are defined as separate digestions or extractions of the same sample, when possible. The percentage difference or range between replicate analyses is also used to monitor precision.

Reproducibility

The reproducibility of a test method refers to the repeatability over a period of time. How well will analytical results repeated a month later agree with today's results? Reproducibility can be measured by the repeated analysis of samples from a previous time period or by analysis by more than one laboratory or laboratory technician.

Qualitative Specificity

In the analysis of complex sample matrices containing multiple components, the use of a single method can lead to misidentification of compounds. The misidentification can be detected by repeated analysis of standards containing the compounds of interest or by independent analysis by a more specific method. For example, mass spectral confirmation can be used to evaluate misidentification problems in the GC laboratory.

2.6 Documentation and Data Handling

Documentation of methods, procedures, and results is an essential aspect of a QA/QC program.

Adequate documentation is required for an instrument maintenance system. RAS laboratories use an individual logbook, which is kept at each instrument, to record all calibration and maintenance activities. This logbook gives a chronology of that instrument's installation, operation, calibrations, maintenance, malfunction, and repairs. An accompanying binder includes all pertinent manufacturing information, service manuals, and similar reference materials.

Directions for calibrations and maintenance, along with appropriate forms and checklists, are maintained in a manual accompanying the logbook. The directions specify the required frequency for calibrations and maintenance, the tolerances for calibrations, and the action to be taken when calibration requirements are not met.

In this system, there is a single source for reference purposes as well as record keeping. All the instrument logbooks are reviewed periodically by the quality assurance coordinator and laboratory manager. A record of these logbook checks is maintained by the QA coordinator.

Work sheets have been developed to insure consistent laboratory data entry for most parameters determined in the laboratories. These sheets are designed to organize the data in a clear and logical manner, and to simplify calculations. The work sheets are divided into various sections including a section for reporting calibration standards and blank values and a section for plotting calibration curves. These work sheets are usually a standard data entry form which the laboratory technician enters in his/her bound lab notebook. When automated calibration is not applicable, electronic calculators are available in the laboratories to generate calibration curves by the method of least squares. Thus errors in reading calibration curves and calculating data are minimized. After an analysis

is completed and a data sheet filled out, the laboratory manager checks the data for completeness and approves the data sheet. After the data have been entered into the SAM system, an updated data sheet is issued to the laboratory manager. When the work is complete, a preliminary report is printed and distributed to the contributing laboratory managers for the final data check and approval. A final report is printed, certified by the laboratory manager, and forwarded to the client.

Proper documentation of quality assurance and quality control activities is an essential requirement. Documentation is needed to demonstrate that quality control activities were completed as scheduled and to communicate the results of the QC tests to laboratory managers and clients. Documentation of QA results is required to provide feedback for improvement of quality control programs.

Quality control documentation should be timely in order for feedback to occur. Daily reporting to laboratory managers is mandatory. Forms are designed to organize the QC data in a clear and logical manner, and to simplify calculations. Control charts are another excellent tool for summarizing quality control test results.

As part of Radian's QA audit program weekly reports summarizing audit results in the laboratories are prepared and distributed to QC coordinators.

3.0 Quality Assurance Audits

The quality assurance audit program of the RAS laboratories is conducted by the RAS QA Coordinator in conjunction with the corporate QA Director. The program consists of the following:

- QA standards are prepared using EPA certified standards, NBS standards, primary standard materials, and NBS-traceable compounds. All standards preparations are recorded in the QA Sample logbook (Figure 3-1).

Standard No. QAS _____

QA type _____

Prep date _____ Prepared by _____ Verified by _____

Standard source _____

Sample matrix _____

Parameters

_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Preparation method

Final vol _____

Figure 3-1. Standards preparation logbook

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QAS _____

Prep method (con't)

Calculations

Sample Distribution

Date	SAM No.	Client	Remarks
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Figure 3-1. (Cont.)

- An inventory of stock standards is maintained within the limits of published stability data. This decreases the time required for daily standard preparation.
- Duplicate samples are requested from clients. These are blind to the laboratory and the client is not billed for the duplicate.
- Blind QA samples are submitted through the Sample Control Center to all laboratories. The parameters and concentration levels are selected by the RAS Quality Assurance Coordinator.
- Laboratory managers submit, via a "QA Alert Form" (Figure 3-2), a list of the types of QA samples needed the following week. This insures that the parameters with which there have been problems are included in the sample.
- Monthly reports are issued from the RAS QA Coordinator (Fig. 3-3). These are submitted to the corporate QA Director, laboratory managers and Director of RAS. Managers are notified immediately of major problems with the results of analysis of a QA sample.
- The results of the program are summarized on a quarterly basis for Radian's management.

In addition to the continuous audit program, provisions for third party review are made with each client's work. Radian Analytical Services welcomes onsite audits, performance samples, and independent evaluations.

3.1 Data Review and Validation

All analysis results are entered into the SAM computer system. Following completion of the analyses, a preliminary report is printed and returned to the appropriate laboratory manager for review and validation. A final report is printed after the certification by the manager. This report is signed and approved by the laboratory manager before being forwarded to the client. The following diagram (Fig. 3-4) illustrates the data flow for a typical sample analysis.

Upon completion of the analysis and before the final data are issued, the results of the QA audit samples are compared to the certified values. These results are plotted on control charts. Separate control charts are maintained for each analysis. If results are outside the accepted control limits, the analytical results are held until the problem is resolved.

3.2 Control Charts

Quality control charts are maintained for both accuracy and precision. Both charts are structured as shown in Figure 3-5. The main portions of the chart are the center line and the two control limits. The center line is the 100% or total recovery/total agreement of analytical results. The upper and lower control limits are calculated from historical data.

Control charts for accuracy are constructed as follows:

Percent recovery of standards (P_{ST}):

$$P_{ST} = 100 \times \frac{\text{analyzed value}}{\text{certified value}}$$

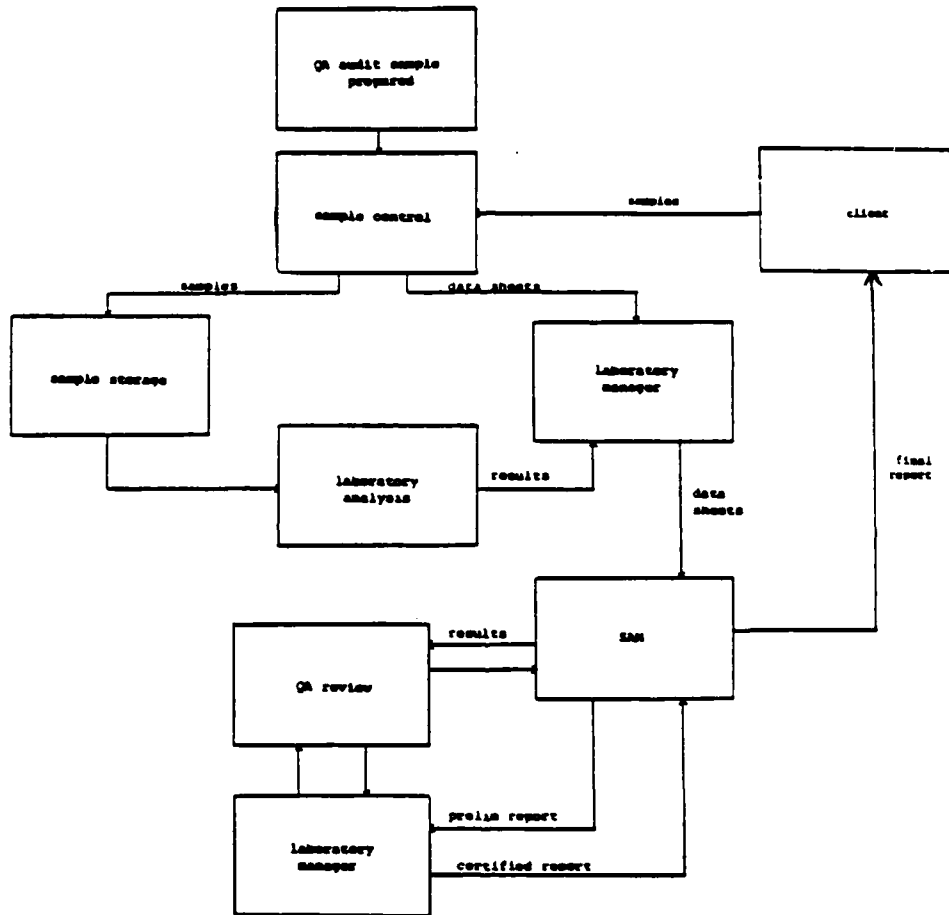


Figure 3-4. Data Flow

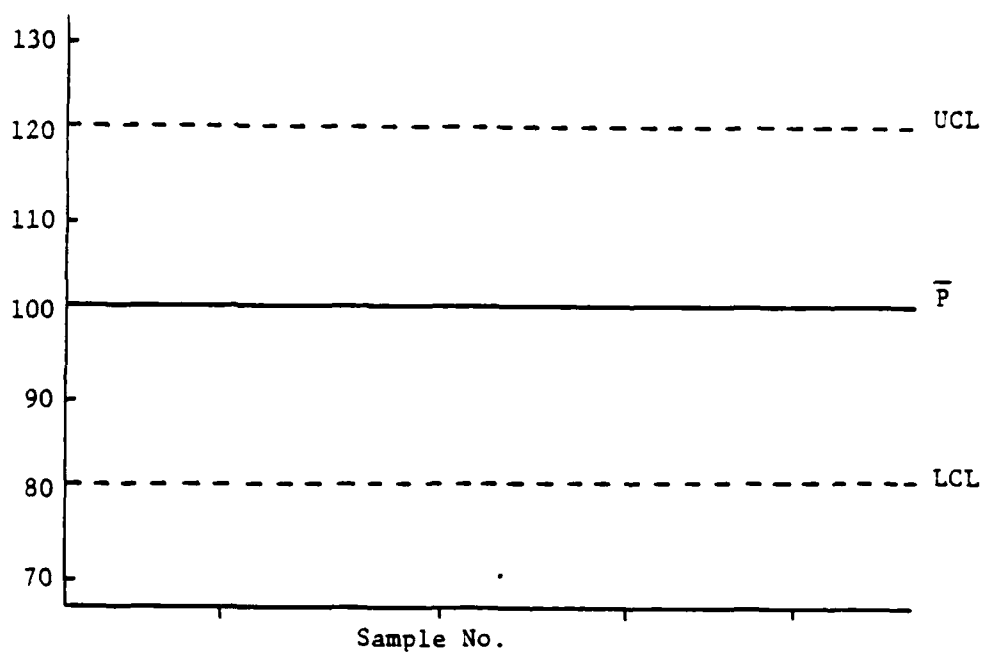


Figure 3-5. Control Chart

Percent recovery of spikes in samples (P_{Sp}):

$$P_{Sp} = 100 \times \frac{\text{analyzed value} - \text{background value}}{\text{spike}}$$

From a set of analyses, the average percent recovery (\bar{P}):

$$\bar{P} = \frac{\sum_{i=1}^n P_i}{n}$$

The standard deviation for percent recovery (S_R):

$$S_R = \sqrt{\frac{\sum_{i=1}^n P_i^2 - \left(\sum_{i=1}^n P_i \right)^2 / n}{n-1}}$$

The upper and lower control limits are therefore

$$\begin{aligned} \text{UCL} &= \bar{P} + 3S_R \\ \text{LCL} &= \bar{P} - 3S_R \end{aligned}$$

An analysis is out of control when either of the two conditions apply:

- 1) Any results outside the control limits
- 2) Seven successive results on the same side of the control line.

Control charts for precision are also constructed. Precision is a function of the concentration range of the analyte. The closer the result is to the analytical detection limit, the more imprecise the data become on a percentage scale. Figure 3-6 illustrates the relationship between detection limit and precision for a typical methodology. Because of this concentration dependence, precision control charts need to be developed for specific concentration ranges for each analyte. For duplicate samples A and B, the ratio of the values of A and B are plotted.

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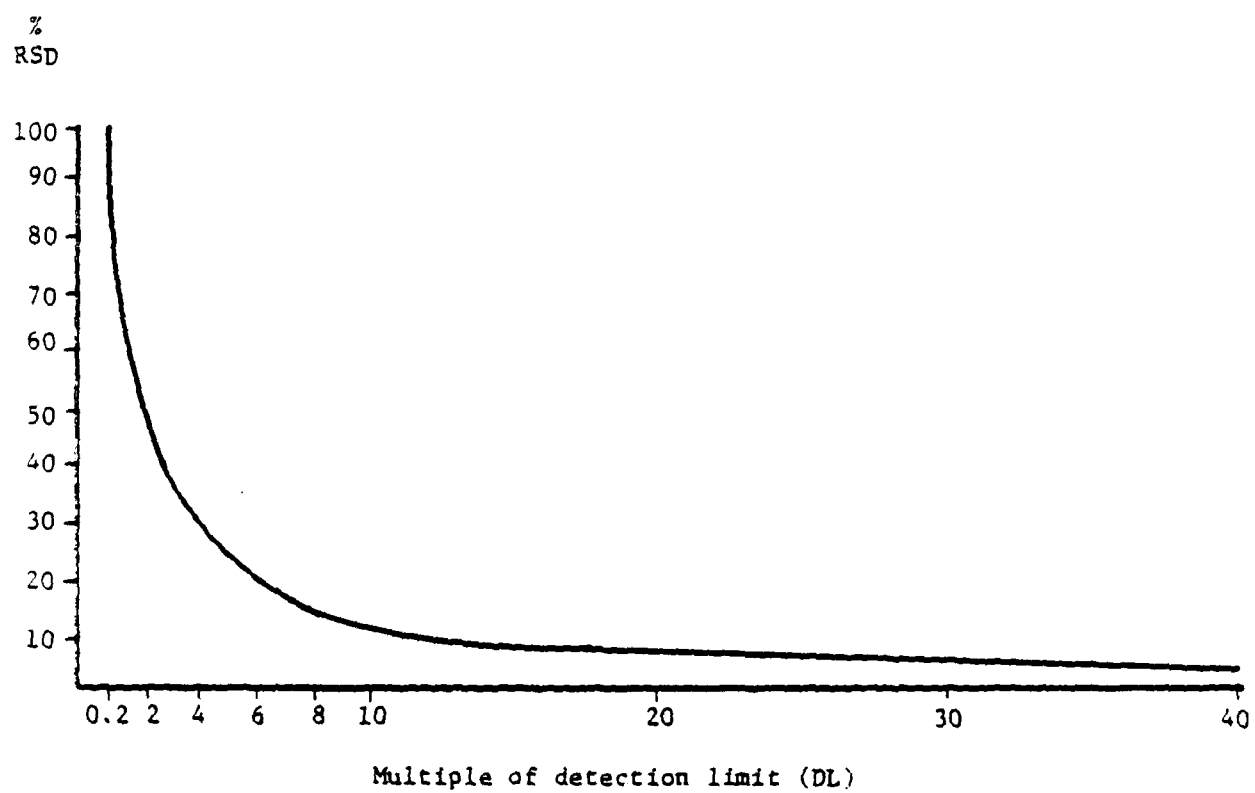


Figure 3-6. Relationship between Detection Limit and Precision

3.3 Concurrent Review

Upon review of analytical results of QA audit samples, the QA Coordinator will schedule a meeting with the laboratory manager if there are any tests out of control or which are deviant from an expected precision/accuracy norm. The purpose of this meeting is to:

- review raw data and determine if there is an explanation for the deviance.
- outline analyses of quality control and/or quality assurance samples to further define the problem and its solution.
- establish a schedule for monitoring the analysis after a solution is implemented, to assure that the problem does not recur.

Involvement of the laboratory manager in the problem assessment and solution is essential to a mutual commitment to a quality analytical laboratory.

APPENDIX H

Chain of Custody Forms



CHAIN OF CUSTODY RECORD

SB6A-1
SB6A-2
Field Sample No. SB6A-3Company Sampled/Address CANNON AFB
Sample Point Description SITE 6 FIRE TRAINING AREA NO. 1

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO visible contaminants or odorCollector's Name TKW Date/Time Sampled 11-19-84Amount of Sample Collected 1 QT MASON JARSample Description 3 SOIL SAMPLESStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

ANALYZE FOR PARAMETERS LISTED IN TABLE 1☐ Hazardous sample (see below)☒ Non-hazardous sample☐ Toxic☐ Pyrophoric☐ Acidic☐ Caustic☐ Other _____☐ Skin irritant☐ Lachrymator☐ Biological☐ Peroxide☐ Flammable (FP < 40°C)☐ Shock sensitive☐ Carcinogenic - suspect☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name SASReceived By [Signature] Date Received 11/31/84 Time 10:30Transported By [Signature] Lab Sample No. 541173

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

SB7-1
SB7-2
Field Sample No. SB7-3Company Sampled/Address CANNON AFB
Sample Point Description SITE 7 Fire Dept TRAINING AREA No. 2

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments No visible contaminants or odorCollector's Name Toby Walters Date/Time Sampled 11-18-84Amount of Sample Collected 1 QT MASON JARSample Description 3 SOIL samplesStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards NON HAZARDOUS SAMPLEANALYZE for PARAMETERS LISTED IN SCOPE OF WORKSEE TABLE 1 (ATTACHED)☐ Hazardous sample (see below)☒ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name FASReceived By [Signature] Date Received 11/21/84 Time 1050Transported By [Signature] Lab Sample No. 2411193

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB8-1
SB8-2
SB8-3

Company Sampled/Address CANNON AFB, CLOUDS NM
Sample Point Description SITE B Fire Dept. Training Area 3

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments N: visible contaminants or odor

Collector's Name Toby Walters Date/Time Sampled 11-17-84

Amount of Sample Collected 1 QT Mason Jar

Sample Description 3 Soil Samples

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

Analyze EACH for parameters listed in scope of work
SEE TABLE 1 (ATTACHED)

☐ Hazardous sample (see below)

☒ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [Signature] Date Received 11-21-84 Time 1030

Transported By [Signature] Lab Sample No. 8411173

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

6 Total
1. METALS
2. INORGANICS
3. 601
4. 602
5. TOX
6. TOC

Field Sample No. WELL ACompany Sampled/Address CANNON AFB, CANNON NMSample Point Description MONITOR WELL A

Stream Characteristics:

Temperature 18.5°C Flow 3 GPM for 3 HRS pH 7.4Visual Observations/Comments WATER CLEAR pumped 74 well volumes prior to samplingCollector's Name Tobin Walters Date/Time Sampled 1-25-85 1330 hrsAmount of Sample Collected 2 1000 mL plastic, 2 500 mL plastic, 4 40 mL vial-vialsSample Description 4 500 mL Amber bottles, conductivity 750 μ mhos/cmStore at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards Samples preserved; metals w/ HNO_3 to pH < 2; 602 w/ HCL to pH < 2; TOC w/ H_2SO_4 to pH < 2☐ Hazardous sample (see below)☐ Non-hazardous sample

<input type="checkbox"/> Toxic	<input type="checkbox"/> Skin irritant	<input type="checkbox"/> Flammable (FP < 40°C)
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Lachrymator	<input type="checkbox"/> Shock sensitive
<input type="checkbox"/> Acidic	<input type="checkbox"/> Biological	<input type="checkbox"/> Carcinogenic - suspect
<input type="checkbox"/> Caustic	<input type="checkbox"/> Peroxide	<input type="checkbox"/> Radioactive
<input type="checkbox"/> Other <u>NON HAZARDOUS</u>		

Sample Allocation/Chain of Possession:

Organization Name RASReceived By [Signature] Date Received 1-23-85 Time 1000Transported By [Signature] Lab Sample No. 85C1145

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

6761

1. METALS
2. INORGANICS
3. 601
4. 602
5. TOX
6. TOL

Field Sample No. Well CCompany Sampled/Address CANNON AFB, CANNON NMSample Point Description MONITOR WELL C

Stream Characteristics:

Temperature 18.5°C Flow 3 gpm for 2 HRS pH 7.2Visual Observations/Comments WATER slightly milky for 1st 1 hr. pumping eventually clear pumped 4 well volumes prior to samplingCollector's Name Tobin Walters Date/Time Sampled 1-24-85, 1430 hrsAmount of Sample Collected 2-1000 mL plastic, 2-500 mL plastic, 4-100 mL vialsSample Description 4 500 mL Amber glassStore at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards NO observed contaminants water clear, conductivity 740 μ mhos/cm. Samples preserved meta w/ HNO₃ to pH < 2, TOC w/ H₂O₂ to pH < 2, 602 w/ HCL pH < 2☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other NON HAZARDOUS

Sample Allocation/Chain of Possession:

Organization Name RA2Received By TKWDate Received 1/24/85Time 1000Transported By TKWLab Sample No. 5501145

Comments

Inclusive Dates of Possession

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession

Organization Name

Received By

Date Received

Time

Transported By

Lab Sample No.

Comments

Inclusive Dates of Possession



CHAIN OF CUSTODY RECORD

6 TOTAL

1. METALS
2. INORGANICS
3. 601
4. 602
5. TOX
6. TOC

Field Sample No. WELL DCompany Sampled/Address CANNON AFB, CANNON NMSample Point Description MONITOR WELL D

Stream Characteristics:

Temperature 18.3 °C Flow 3 GPM for 1.75 HRS pH 8.2Visual Observations/Comments WATER CLEAR pumped 74 well volumes
prior to samplingCollector's Name Tobin Walters Date/Time Sampled 1-25-85 0930 HRSAmount of Sample Collected 2 1000 mL plastic, 2 500 mL plastic, 440 mL WOA-vials,Sample Description 4 500 mL Amber glass Conductivity 720 μ mhos/cmStore at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards Samples preserved, metals w/ HNO₃
to pH < 2, 602 w/ HCL to pH < 2, TOC w/ H₂SO₄ to pH < 2☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other NON HAZARDOUS

Sample Allocation/Chain of Possession:

Organization Name RASReceived By [Signature]Date Received 1-21-85Time 1000Transported By TKWLab Sample No. 5501145

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____

Date Received _____

Time _____

Transported By _____

Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____

Date Received _____

Time _____

Transported By _____

Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

Field Sample No. SB17C-1Company Sampled/Address CANNON AFBSample Point Description ENTOMOLOGY RINSE AREA

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 2'-4'Collector's Name T. Walters Date/Time Sampled 1-14-85Amount of Sample Collected 2 1QT MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards ANALYZE FOR ~~BO10, BO20~~ TOC, pesticides, Arsenic, mercury, BO10, BO20☒ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Pyrophoric☐ Acidic☐ Caustic☐ Other _____☐ Skin irritant☐ Lachrymator☐ Biological☐ Peroxide☐ Flammable (FP < 40°C)☐ Shock sensitive☐ Carcinogenic - suspect☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name IASReceived By [Signature] Date Received 2-11-85 Time 1500Transported By TW Lab Sample No. 85C2062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB17C-2

Company Sampled/Address CANNON AFB

Sample Point Description ENTOMOLOGY RINSE AREA

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 9 1/2' - 10 1/2'

Collector's Name T. Walton Date/Time Sampled 1-14-85

Amount of Sample Collected 2 1QT MASON JAR

Sample Description SOIL

Store at: ☐ Ambient ☐ 5°C ☒ 10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards ANALYZE for TOC, pesticides, arsenic, mercury, 8010, 8020

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [Signature] Date Received 2-11-85 Time 1500

Transported By TW Lab Sample No. 5502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

Field Sample No. SB17C-3Company Sampled/Address CANNON AFB
Sample Point Description ENTOMOLOGY RINSE AREA

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 57 1/2' - 58.0'Collector's Name T. Walton Date/Time Sampled 1-14-85Amount of Sample Collected 2 1 QT MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ - 10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards analyze for TOC, pesticides, arsenic mercury, 8010, 8020☒ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Pyrophoric☐ Acidic☐ Caustic☐ Other _____☐ Skin Irritant☐ Lachrymator☐ Biological☐ Peroxide☐ Flammable (FP < 40°C)☐ Shock sensitive☐ Carcinogenic - suspect☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name IASReceived By [Signature] Date Received 2-11-85 Time 1500Transported By TW Lab Sample No. 9502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. QA-1Company Sampled/Address CANNON AFB

Sample Point Description _____

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 5'-7'Collector's Name T. Walton Date/Time Sampled 1-14-85Amount of Sample Collected 1 QT MASON JAR

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☐ Other _____☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards OIL and Grease, BOLD, B020, lead☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RASReceived By Gene Amisley Date Received 2-11-85 Time 1500Transported By TW Lab Sample No. 8502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. St-1

Company Sampled/Address CANNON AFB

Sample Point Description Stormwater collection pt.

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 2'-5'

Collector's Name T. Walters Date/Time Sampled 1-14-85

Amount of Sample Collected 2 LOT MASON JARS

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards analyze for oil and grease, BOB, lead, inorganic species As, Ba, Cd, Cr, Cu, Fe, Ni, Hg, Se, Ag, Zn

☐ Hazardous sample (see below)

☐ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name DAS

Received By Mike Timmer Date Received 2-11-85 Time 1500

Transported By TW Lab Sample No. 8502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. ST-2Company Sampled/Address CANNON AFBSample Point Description Stormwater Collection point

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 2.0'-5.0'Collector's Name T. Walters Date/Time Sampled 1-14-85Amount of Sample Collected 2 10 MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards ANALYZE FOR OIL & GREASE, 8010, 8020, lead, As, Ba, Cd, Cr, Cu, Fe, Ni, Hg, Se, Ag, Zn.☒ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Pyrophoric☐ Acidic☐ Caustic☐ Other _____☐ Skin Irritant☐ Lachrymator☐ Biological☐ Peroxide☐ Flammable (FP < 40°C)☐ Shock sensitive☐ Carcinogenic - suspect☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name DASReceived By [Signature] Date Received 2-11-85 Time 1900Transported By TW Lab Sample No. 8502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. ST-3

Company Sampled/Address CANNON AFB
Sample Point Description Stormwater Collection point

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 2.0'-5.0'

Collector's Name T. Walter Date/Time Sampled 1-14-85

Amount of Sample Collected 2 10T MASON JARS

Sample Description SOIL

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards ANALYZE FOR, OIL and Grease, BOD,
8020, lead, As, Ba, Cd, Cr, Cu, Fe, Ni, Hg, Se, Ag, Zn

☐ Hazardous sample (see below)

☐ Non-hazardous sample

<input type="checkbox"/> Toxic	<input type="checkbox"/> Skin Irritant	<input type="checkbox"/> Flammable (FP < 40°C)
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Lachrymator	<input type="checkbox"/> Shock sensitive
<input type="checkbox"/> Acidic	<input type="checkbox"/> Biological	<input type="checkbox"/> Carcinogenic - suspect
<input type="checkbox"/> Caustic	<input type="checkbox"/> Peroxide	<input type="checkbox"/> Radioactive
<input type="checkbox"/> Other _____		

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [Signature] Date Received 1-11-85 Time 1500

Transported By [Signature] Lab Sample No. 9502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB11A-1

Company Sampled/Address CANNON AFB
Sample Point Description ENGINE Test cell overflow pit

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 1'-2'

Collector's Name T. Walters Date/Time Sampled 1-14-85

Amount of Sample Collected 2 1QT MASON JARS

Sample Description SOIL

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards analyze for 8010, 8020, oil and grease, lead

☐ Hazardous sample (see below)

☐ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin Irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By Julie Lindsey Date Received 2-11-85 Time 1500

Transported By TW Lab Sample No. 8502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB11A-2

Company Sampled/Address CANNON AFB

Sample Point Description engine test cell overflow pit

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 5'-7'

Collector's Name T. Walton Date/Time Sampled 1-14-85

Amount of Sample Collected 2 1QT MASON JARS

Sample Description SOIL

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards ANALYZE FOR BO10, BO20, OIL and green lead

☒ Hazardous sample (see below)

☐ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin Irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [Signature] Date Received 2-11-85 Time 1500

Transported By TW Lab Sample No. 6502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB194-1
~~SB194-1~~Company Sampled/Address Cannon AFB
Sample Point Description MOGAS SPILL

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 3'-4'Collector's Name T. Walters Date/Time Sampled 12-18-85Amount of Sample Collected 2 1QT MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards ANALYZE FOR OIL & GREASE,
Lead, 8010, 8020☒ Hazardous sample (see below)☐ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name RASReceived By Mike Sunday Date Received 2-11-85 Time 1500Transported By TW Lab Sample No. 8502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB19A-2

Company Sampled/Address CANNON AFB
Sample Point Description MOGAS spill

Stream Characteristics:

Temperature _____ Flow _____ pH _____
Visual Observations/Comments depth of sample 8.0'-10.0'

Collector's Name T. Walton Date/Time Sampled 12-18-84
Amount of Sample Collected 2 1QT MASON JARS
Sample Description SOIL
Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions
Other Instructions - Special Handling - Hazards Analyze for lead, oil & grease
8010, 8020

☐ Hazardous sample (see below) ☐ Non-hazardous sample

<input type="checkbox"/> Toxic	<input type="checkbox"/> Skin irritant	<input type="checkbox"/> Flammable (FP < 40°C)
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Lachrymator	<input type="checkbox"/> Shock sensitive
<input type="checkbox"/> Acidic	<input type="checkbox"/> Biological	<input type="checkbox"/> Carcinogenic - suspect
<input type="checkbox"/> Caustic	<input type="checkbox"/> Peroxide	<input type="checkbox"/> Radioactive
<input type="checkbox"/> Other _____		

Sample Allocation/Chain of Possession:

Organization Name RAS
Received By [Signature] Date Received 2-11-85 Time 1500
Transported By TW Lab Sample No. 8502062
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB19A-3

Company Sampled/Address CANNON AFB
Sample Point Description MOGAS Spill Area

Stream Characteristics:

Temperature _____ Flow _____ pH _____
Visual Observations/Comments sample depth 45.0' - 47.0'

Collector's Name T. Walter Date/Time Sampled 12-18-84

Amount of Sample Collected _____

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☐ - 10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Analyze for lead, oil & grease,
8010, 8020

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By Mike Lindsay Date Received 2-11-85 Time 1500

Transported By TW Lab Sample No. 5502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

AD-A175 325

INSTALLATION RESTORATION PROGRAM PHASE II
CONFIRMATION/QUANTIFICATION STA..(U) RADIAN CORP AUSTIN
IX SEP 86 F33615-84-D-4482

9/9

UNCLASSIFIED

F/G 13/2

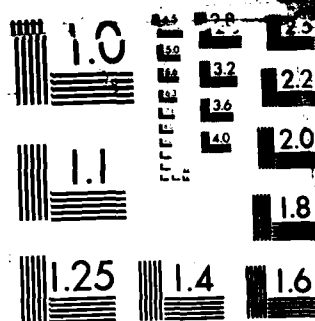
NL

END

DATE

FILED

87



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



CHAIN OF CUSTODY RECORD

Field Sample No. SB 19B-1Company Sampled/Address CANNON AFB
Sample Point Description MOGAS Spill

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of Sample 0-1'Collector's Name T. Walther Date/Time Sampled 12-19-84Amount of Sample Collected 2 1 QT MASON JARSSample Description SoilStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards Analyze for lead, Oil & grease,
8010, 8020☒ Hazardous sample (see below)☐ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name RASReceived By J. H. Hixson Date Received 12-11-85 Time 1500Transported By TW Lab Sample No. 8502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

Field Sample No. SB19B-2Company Sampled/Address CANNON AFB
Sample Point Description MOGAS SPILL Area

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 9.0'-10.0'Collector's Name T. Walton Date/Time Sampled 12-19-84Amount of Sample Collected 2 1 QT MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards Analyze for lead, oil and grease,
8010, 8020☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RASReceived By gme [signature] Date Received 2-11-85 Time 1500Transported By TW Lab Sample No. 8502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

Field Sample No. SB19B-3Company Sampled/Address CANNON AFB
Sample Point Description MOGAS Spill Area

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments depth of sample 57.5' - 58.5'Collector's Name T. Walton Date/Time Sampled 12-19-84Amount of Sample Collected 2 1 QT mason JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards Analyze for oil and grease, lead, 8010, 8020☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RASReceived By John Lindsay Date Received 2-11-85 Time 1500Transported By TW Lab Sample No. 8502062

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

3 Samples from
Site 11,
~~SAMPLE 11A, 11B, 11C~~

Field Sample No. SB 11A-1SB 11B-2
SB 11B-3Company Sampled/Address CANNON AFBSample Point Description Engine test cell overflow and Leach field, Site 11

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO visible organics, some ground discolorationCollector's Name W. Boettner Date/Time Sampled 20, Jan 1985Amount of Sample Collected 3 1QT MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards ANALYZE FOR OIL & GREASE, BD10, B020
lead,☒ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Pyrophoric☐ Acidic☐ Caustic☐ Other _____☐ Skin irritant☐ Lachrymator☐ Biological☐ Peroxide☐ Flammable (FP < 40°C)☐ Shock sensitive☐ Carcinogenic - suspect☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RASReceived By John Tindley Date Received 2-15-85 Time 1400Transported By TW Lab Sample No. 8502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB15A-1
SB15A-2
SB15A-3

Company Sampled/Address CANNON AFB
Sample Point Description Site 15, AGE drainage ditch

Stream Characteristics:

Temperature _____ Flow _____ pH _____
Visual Observations/Comments NO vis organics

Collector's Name W. Boethius Date/Time Sampled 1-26-85

Amount of Sample Collected 3 1 QT MASON JARS

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☒ 10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Analyze for: oil and grease,
8010, 8020, lead

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By Mike Timoney Date Received 2-15-85 Time 1400

Transported By TW Lab Sample No. 8502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB15B-1
SB15B-2
SB15B-3

Company Sampled/Address CANNON AFB
Sample Point Description Site 15, AGE drainage ditch

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO vis organics

Collector's Name W. Boettner Date/Time Sampled 1-27-85

Amount of Sample Collected 3 1QT MASON JARS

Sample Description oily

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Analyze for; oil and grease
BO10, BO20, lead.

☒ Hazardous sample (see below) Some oil seen on sample ☐ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin irritant | <input type="checkbox"/> Flammable (FP < 40) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name DAS

Received By [Signature] Date Received 2-15-85 Time 1400

Transported By TW Lab Sample No. 8502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

Field Sample No. SB2A-1
SB2A-2Company Sampled/Address CANNON AFB
Sample Point Description Site 2, Landfill No. 2

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO visible organicsCollector's Name W. Baethner Date/Time Sampled 1-23-85Amount of Sample Collected 2 1QT MASON JARSSample Description soil site 2Store at: ☐ Ambient ☐ 5°C ☒ 10°C ☐ Other _____☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards Analyze for oil and grease,
BO10, BO20, lead, inorganics (As, Ba, Cd,
Cr, Cu, Fe, Ni, Hg, Se, Ag, Zn) TOL☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name IRASReceived By ME TUDNEY Date Received 2-15-85 Time 1400Transported By TW Lab Sample No. 650209D

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB2B-1
SB2B-2

Company Sampled/Address CANNON AFB

Sample Point Description Site 2, Landfill No. 2

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO VIS. ORGANICS

Collector's Name W. Boetham Date/Time Sampled 1-23-85

Amount of Sample Collected 2 1QT MASON JARS

Sample Description SOIL, Site 2

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Analyze for same parameters listed
on COC for SB2A, And Table 1 in delivery order
(replace TOX with 8010, 8020)

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [Signature] Date Received 2-15-85 Time 1400

Transported By TW Lab Sample No. 8502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB2C-1
SB2C-2

Company Sampled/Address CANNON AFB
Sample Point Description Site 2, Landfill No. 2

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO VIL organics

Collector's Name W. Boettner Date/Time Sampled 1-24-85

Amount of Sample Collected 2 1QT MASON JARS

Sample Description Soil, site 2

Store at: ☐ Ambient ☐ 5°C ☒ 10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards analyze for same parameters listed
in COC form SBA, and table 1 in delivery order
(replace TOX with B010, B020)

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [Signature] Date Received 2-15-85 Time 1400

Transported By TW Lab Sample No. 8502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

Field Sample No. SB2D-1
SB2D-2Company Sampled/Address CANNON AFB
Sample Point Description Site 2, Landfill No. 2

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments no visible organicsCollector's Name W. Boettner Date/Time Sampled 1-25-85Amount of Sample Collected 2 1QT MASON JARSSample Description Soil site 2Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards ANALYZE for some parameters
listed in Table 1 of DO, and COC form for SBA A
(replace TOX with 8010, 8020)☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RASReceived By [Signature] Date Received 2-15-85 Time 1400Transported By TW Lab Sample No. 8502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB2E-1
SB2E-2
SB2E-3

Company Sampled/Address CANNON AFB
Sample Point Description Site 2, Landfill No. 2

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO visible organics

Collector's Name W. Boettner Date/Time Sampled 1-26-85

Amount of Sample Collected 2 1QT MASON JARS

Sample Description Soil, site 2

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Analyze for some parameters listed
in Site 2 in Table 1 of delivery order (replace TOX
with 8010-8020)

☐ Hazardous sample (see below)

☐ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By John Anderson Date Received 2-15-85 Time 1400

Transported By TW Lab Sample No. 8502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB9A-1
SB9A-2Company Sampled/Address CANNON AFBSample Point Description Fire training Area No. 4

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments No vis. organicsCollector's Name W. Boettner Date/Time Sampled 1-22-85Amount of Sample Collected 2 LOT Mason JarsSample Description soil SITE 9Store at: ☐ Ambient ☐ 5°C ☒ <10°C ☐ Other _____☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards Analyze for oil & grease, 8010,
8020, Lead,☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RASReceived By ONE MINSKY Date Received 2-15-85 Time 1400Transported By TW Lab Sample No. 5502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



3 sample site
9B

CHAIN OF CUSTODY RECORD

Field Sample No. SB9B-1

Company Sampled/Address CANNON AFB

Sample Point Description SITE 9B, fuel dept. training area No. 4

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO visible organics

Collector's Name W. Boettner Date/Time Sampled 1-22-85

Amount of Sample Collected 3 1QT MASON JARS

Sample Description SOIL, Site 9

Store at: ☐ Ambient ☐ 5°C ☒ 10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Analyze for oil and grease
BOLO, BOTO, lead

☒ Hazardous sample (see below)

☐ Non-hazardous sample

- ☐ Toxic
- ☐ Pyrophoric
- ☐ Acidic
- ☐ Caustic
- ☐ Other _____

- ☐ Skin irritant
- ☐ Lachrymator
- ☐ Biological
- ☐ Peroxide

- ☐ Flammable (FP < 40°C)
- ☐ Shock sensitive
- ☐ Carcinogenic - suspect
- ☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By James M. W. [Signature] Date Received 2-15-85 Time 1400

Transported By TW Lab Sample No. 8502090

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

SB-4A,B,C,D,E,F,G
SB-3A,B,C,D,F,G-1
(9 samples each + 2 QA =)
Field Sample No. 118 sam

Company Sampled/Address Cannon AFB, Clovis, NM
Sample Point Description Landfills 3 + 4

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments no evidence of obvious contamination at any sample points

Collector's Name D. Richman Date/Time Sampled Feb. 8-16, 1985

Amount of Sample Collected 40 ml vial - each

Sample Description Soil

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards _____

☐ Hazardous sample (see below)

☒ Non-hazardous sample

☐ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☐ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RAS -

Received By [Signature] Date Received 2-18-85 Time 0900

Transported By DR Lab Sample No. 4502093, 094

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

Field Sample No. SB-3A
SB-3B
Company Sampled/Address CANNON AFB, CLOVIS NM SB-3C
Sample Point Description Site 3 landfill NO. 3 SB-3D

Stream Characteristics:

Temperature _____ Flow _____ pH _____
Visual Observations/Comments NO visible contaminants

Collector's Name D. Richmann Date/Time Sampled 2-13-85 - 2-16-85
Amount of Sample Collected 1 1QT MASON JAR & 13 total
Sample Description Soil
Store at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards ANALYZE FOR lead, oil & grease,
Inorganics (See Delivery order table)

? ☐ Hazardous sample (see below)

☐ Non-hazardous sample

- | | | |
|--------------------------------------|--|---|
| <input type="checkbox"/> Toxic | <input type="checkbox"/> Skin Irritant | <input type="checkbox"/> Flammable (FP < 40°C) |
| <input type="checkbox"/> Pyrophoric | <input type="checkbox"/> Lachrymator | <input type="checkbox"/> Shock sensitive |
| <input type="checkbox"/> Acidic | <input type="checkbox"/> Biological | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic | <input type="checkbox"/> Peroxide | <input type="checkbox"/> Radioactive |
| <input type="checkbox"/> Other _____ | | |

Sample Allocation/Chain of Possession:

Organization Name RAS
Received By [Signature] Date Received 2-26-85 Time 0930
Transported By [Signature] Lab Sample No. 8502176
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

SB-3F-(1-3)
SB-36-(1-3)
SB-3H-(1-3)
SB-3I-(1-3)

Field Sample No. total 12

Company Sampled/Address CANNON AFB

Sample Point Description Site 3 Landfill No. 3

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO visible contaminants

Collector's Name D. Richman T. Walters Date/Time Sampled 2-15-85, 2-22-85

Amount of Sample Collected _____

Sample Description _____

Store at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Analyze for Lead, oil & grease
inorganics (see table 1, delivery order)

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin Irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☐ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By Joe Mundy Date Received 2-26-85 Time 0930

Transported By Ed W Lab Sample No. 8502176, 177

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

shipped 2-26-85 by Toly Walter

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

SB-4A
SB-4B
SB-4C
SB-4D SB-4E

Field Sample No. ~~SB-4D~~

Company Sampled/Address CANNON AFB

Sample Point Description Site No. 4 landfill No. 4

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments collected NO vis. organics

Collector's Name D. Richman Date/Time Sampled 2-8-85 - 2-11-85

Amount of Sample Collected 2 1QT MASON JARS

Sample Description SOIL

Store at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards ANALYZE FOR OIL & GREASE
lead and inorganics, (see D.O. table 1)

? ☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By Mike Timmons Date Received 2-27-85 Time 0900

Transported By Feb 28 Lab Sample No. 8502185

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Shipped 2-26-85, by Tony Walter

RADIAN
CORPORATION

CHAIN OF CUSTODY RECORD

SB-4E (2)
SB-4F (3)
SB-4G (3)
SB-1A (3)
SB-1B (3) SB-

Field Sample No. Total 18

Company Sampled/Address CANNON AFB, Clovis, NM
Sample Point Description Landfill No. 4, Landfill No. 1

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO visible contaminants

Collector's Name T. Walter, P. Rehman Date/Time Sampled 2-11-85 - 2-25-85

Amount of Sample Collected 2 1QT mason jars

Sample Description soil site 4, site 1

Store at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards ANALYZE for oil & grease, Lead, inorganics, (see table 7 of B.O.)

☒ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☐ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name IAS

Received By Anthony Date Received 2-27-85 Time 0900

Transported By Fed Ex Lab Sample No. 6502145, 146

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

Field Sample No. SB-1D-1
SB-1D-2
SB-1D-3Company Sampled/Address CANNON AFB
Sample Point Description Site 1D, Landfill No. 1

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments NO VIS. CONTAMINANTSCollector's Name TKW (ext. 5292) Date/Time Sampled ~~4-1-85~~ 3-25-85Amount of Sample Collected 2 vial-vials each, Mason Jars sent to OEHLSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☐ Other _____☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards

Analyze for oil & grease, lead, As, Ba, Cd, Cu, Cr (total), Hg
Mn, Se, Ag, Zn,
See Attachment☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name PASReceived By John Lindsay Date Received 3-4-85 Time _____Transported By TKW Lab Sample No. 6505176 (used 9503033)

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

Field Sample No.

TOTAL 11

SB-1E-1
SB-1E-2
SB-1E-3
SB-3E-1
SB-3E-2
SB-3E-3
SB-13A-1
SB-13A-2
SB-13B-1
SB-13B-2A
pH SB-13B-2

Company Sampled/Address CANNON AFB, NM
Sample Point Description Landfill No. 3, Sewage Lift Station
Stream Characteristics:
Temperature _____ Flow _____
Visual Observations/Comments possible contaminants in samples
SB-13A-1, 13A-2, 13B-1, 13B-2, 13B-2A
Collector's Name Tobin Walker Date/Time Sampled 2-25-85 - 2-27-85
Amount of Sample Collected 2 1QT MASON JARS
Sample Description SOIL AND SMDGE
Store at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Analyze for oil & grease, lead
and metals as within table
1 of D.O.

☒ Hazardous sample (see below)

☐ Non-hazardous sample

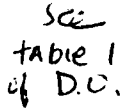
<input type="checkbox"/> Toxic	<input type="checkbox"/> Skin irritant	<input type="checkbox"/> Flammable (FP < 40°)
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Lachrymator	<input type="checkbox"/> Shock sensitive
<input type="checkbox"/> Acidic	<input type="checkbox"/> Biological	<input type="checkbox"/> Carcinogenic - suspect
<input type="checkbox"/> Caustic	<input type="checkbox"/> Peroxide	<input type="checkbox"/> Radioactive
<input type="checkbox"/> Other _____		

Sample Allocation/Chain of Possession:

Organization Name RAS
Received By Mike Lindsay Date Received 3-4-85 Time 0900
Transported By TRW Lab Sample No. 6503029
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____



oil & grease, E010, E020, lead → SB-19A-1A
oil & grease, E010, E020, lead SB-15B-1A
oil & grease, E010, E020, lead, tox, inorg. SB-20-1A
oil & grease, E010, E020, lead SB-1A-2A
CHAIN OF CUSTODY RECORD
oil & grease, E010, E020, lead, inorg. ST-1A

Field Sample No. 54.4.1

Sample Point Description Q A Sample

Temperature _____ Flow _____ pH _____

Visual Observations/Comments no visible contaminants

Collector's Name W. Brothers, T. K. Heller Date/Time Sampled 11/1/74 10:00

Amount of Sample Collected 2 5 1 qt Mason Jars / with tie on lids

Sample Description SCIL

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☐ Other 5°C☐ **Caution - No more sample available** ☐ **Return unused portion of sample** ☐ **Discard unused portions**

Other Instructions - Special Handling - Hazards See list of parameters above

☐ **Hazardous sample (see below)**☐ **Non-hazardous sample**

7 Toxic

Pyrophoric

☐ **Acidic**

☐ **Caustic**

☐ Other☐ **Skin irritant**

☐ **Lachrymator**

☐ **Biological**

☐ Peroxide

☐ **Flammable (FP< 40°C)**

☐ **Shock sensitive**

☐ **Carcinogenic - suspect**

☐ **Radioactive**

Organization Name RAS

Received By Mr. Y. M. Allen Date Received 3-24-85 Time 1930

Transported By C TW A Lab Sample No. 450329

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____



CHAIN OF CUSTODY RECORD

SB-17A-1 SB-17B-1
SB-17A-2 SB-17B-2
SB-17A-3 SB-17B-2A
SB-17A-4

Field Sample No. total 7Company Sampled/Address Cannon AFBSample Point Description Entomology Kille AFB

Stream Characteristics:

Temperature Flow pH Visual Observations/Comments no vis. contaminantsCollector's Name W. B. Butler Date/Time Sampled Amount of Sample Collected 2 LQT Mason jarsSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☐ Other 5°C☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards Analyze for EC10, EC20, TCC,
pesticides, inorganic species
(see table 1, Cannon D.O.)☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Pyrophoric☐ Acidic☐ Caustic☐ Other ☐ Skin irritant☐ Lachrymator☐ Biological☐ Peroxide☐ Flammable (FP < 40°C)☐ Shock sensitive☐ Carcinogenic - suspect☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RASReceived By Antimacy Date Received 3-24-85 Time 0830Transported By TW Lab Sample No. 8503291Comments Inclusive Dates of Possession Organization Name Received By Date Received Time Transported By Lab Sample No. Comments Inclusive Dates of Possession Organization Name Received By Date Received Time Transported By Lab Sample No. Comments Inclusive Dates of Possession

CHAIN OF CUSTODY RECORD

2 H₂O Trip blanks
2 soils background

Field Sample No. background #1
background #2
trip blank #1
trip blank #2

Company Sampled/Address CANNON AFB
Sample Point Description SW base

Stream Characteristics:
Temperature _____ Flow _____ pH _____
Visual Observations/Comments _____

Collector's Name T. Walters Date/Time Sampled 4-3-85
Amount of Sample Collected _____
Sample Description 2 Jars w/ Teflon lids
Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☐ Other 5°C

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards ANALYZE soils for metals
ANALYZE trip blanks for 601, 602 compounds, check
with T. Walters prior to ANALYZING samples

☐ Hazardous sample (see below) ☐ Non-hazardous sample

<input type="checkbox"/> Toxic	<input type="checkbox"/> Skin irritant	<input type="checkbox"/> Flammable (FP < 40°C)
<input type="checkbox"/> Pyrophoric	<input type="checkbox"/> Lachrymator	<input type="checkbox"/> Shock sensitive
<input type="checkbox"/> Acidic	<input type="checkbox"/> Biological	<input type="checkbox"/> Carcinogenic - suspect
<input type="checkbox"/> Caustic	<input type="checkbox"/> Peroxide	<input type="checkbox"/> Radioactive
<input type="checkbox"/> Other _____		

Sample Allocation/Chain of Possession:

Organization Name RAS
Received By ANANDY Date Received 4-4-85 Time 1300
Transported By TW Lab Sample No. 9504059 9504134
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

Organization Name _____
Received By _____ Date Received _____ Time _____
Transported By _____ Lab Sample No. _____
Comments _____
Inclusive Dates of Possession _____

CHAIN OF CUSTODY RECORD

WELL A
WELL B
WELL C
WELL D

Field Sample No. _____

Company Sampled/Address CANADAN AFB, NM

Sample Point Description landfill No. 5 monitor wells

Stream Characteristics:

Temperature 19°C Flow _____ pH 7.4

Visual Observations/Comments clear

Collector's Name T. K. Walton Date/Time Sampled 4-22-85 0900hrs-1400h

Amount of Sample Collected well A (240 ml vial) well B (140 ml vial) well C (240 ml vial) well D (2)

Sample Description WATER

Store at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other NO HCL preservative

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards Run 602 on all, including the 4 field blanks and 1 trip blank

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Pyrophoric

☐ Acidic

☐ Caustic

☐ Other _____

☐ Skin irritant

☐ Lachrymator

☐ Biological

☐ Peroxide

☐ Flammable (FP < 40°C)

☐ Shock sensitive

☐ Carcinogenic - suspect

☐ Radioactive

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [Signature] Date Received 4-24-85 Time 0830

Transported By [Signature] Lab Sample No. 5504169

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Sample held in freeze
Storage prior to Anal.

CHAIN OF CUSTODY RECORD

Field Sample No. 3 Samples
6 B-1
6 B-2
6 B-3

Company Sampled/Address CANNON AFB site 6
Sample Point Description SOIL

Stream Characteristics:

Temperature _____ Flow _____ pH _____

Visual Observations/Comments _____

Collector's Name TKW Date/Time Sampled 11-20-84

Amount of Sample Collected 3 1QT MASON JARS

Sample Description _____

Store at: ☐ Ambient ☐ 5°C ☒ -10°C ☐ Other _____

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards RUN FOR: OIL & Grease, 8010, 8020
& Lead

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin Irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other _____

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By [Signature] Date Received 5-21-85 Time 0830

Transported By TKW Lab Sample No. 8505139

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

usive Dates of Possession _____



CHAIN OF CUSTODY RECORD

TOTAL 6 1. METALS
2. INORGANICS
3. 601
4. 602
5. TOX
6. TOC

Field Sample No. well BCompany Sampled/Address CANNON AFB, CANNON NMSample Point Description MONITOR WELL B

Stream Characteristics:

Temperature 18.4°C Flow 3 GPM for 1.6 HRS pH 7.5Visual Observations/Comments WATER clear, pumped 24 well volumes prior to samplingCollector's Name Tobin K. Walters Date/Time Sampled 1-24-85 1120 hrsAmount of Sample Collected 2 1000 mL plastic, 2 500 mL plastic, 4 40 mL VOA-VIALSSample Description 4 500 mL amber bottles, sample clear conductivity 700 umhoStore at: ☐ Ambient ☒ 5°C ☐ -10°C ☐ Other _____☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards no visible contaminants samples preserved metals w/HNO₃ to pH < 2, TOC w/H₂O₂ to pH < 2, 602 w/HCL to pH < 2☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other NON HAZARDOUS

Sample Allocation/Chain of Possession:

Organization Name RASReceived By TKW Date Received 1-28-85 Time 1000Transported By TKW Lab Sample No. 4501145

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

Organization Name _____

Received By _____ Date Received _____ Time _____

Transported By _____ Lab Sample No. _____

Comments _____

Inclusive Dates of Possession _____

APPENDIX I

Correspondence with Federal, State,
and/or Local Regulatory Authorities

APPENDIX I

CORRESPONDENCE WITH FEDERAL, STATE, AND/OR
LOCAL REGULATORY AUTHORITIES

Radian did not have a need or
requirement to correspond with
regulatory authorities during
the conduct of this IRP.

APPENDIX J

References

APPENDIX J

REFERENCES

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APPENDIX K

Biographies of Key Personnel

RADIAN
CORPORATION

FRANCIS J. SMITH

EDUCATION:

M.S., Sanitary Engineering, Massachusetts Institute of Technology, 1954.

B.S., Civil Engineering, University of Michigan, 1950.

EXPERIENCE:

Senior Program Manager, Research and Engineering Operations, Radian Corporation, McLean, VA, 1985-Present.

Program Manager, Research and Engineering Operations, Radian Corporation, McLean, VA, 1981-1985.

Senior Associate, Occupational Health and Safety and Environmental Engineering, A.T. Kearney Management Consultants, Alexandria, VA, 1980-1981.

Acting Chief Environmental Planning, Logistics and Engineering, Headquarters USAF, Washington, DC, 1979-1980.

Chief Environmental Policy, Logistics and Engineering, Headquarters USAF, Washington, DC, 1976-1979.

Director Environmental Protection, Air Force Systems Command (AFSC), Andrews Air Force Base, MD, 1972-1976.

Chief Bioenvironmental Engineering, Headquarters Pacific Air Force, Hickam Air Force Base, HI, 1968-1972.

Similar assignments at Headquarters Alaskan Air Command, Headquarters Tactical Air Command, and at Subcommands of Strategic Air Command, 1951-1968.

Junior Industrial Waste Engineer, Lederle Division, American Cyanamide, Pearl River, NY, 1950-1951.

FIELDS OF EXPERIENCE:

Mr. Smith has had 35 years experience in all aspects of environmental engineering. This experience ranges from carrying out the routine environmental and occupational health operations at individual installations to running the environmental activities of a major federal agency. He is a registered professional engineer, certified industrial hygienist, certified safety professional and is a diplomate of the American Academy of Environmental Engineers.

Mr. Smith is the program manager for the confirmation study of the Marine Corps Training Base at Quantico, Virginia. This is the second phase of the

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Navy assessment and control of installation pollutants (NACIP) program for the base. It includes three phases: verification of the existence of groundwater contamination; further characterization, as needed; and preparation of remedial plans and specifications. He was the program manager on the Air Force Engineering and Services Center (AFESC) basic ordering agreement. Mr. Smith was the program manager for four USAF IRP phase 1 record searches. He is also the program manager for the preparation of a hazardous waste management plan, SPCC and other related environmental plans for a Naval air station. He manages a subcontract with a major USA architect-engineer firm for the provision of analytical and technical services in support of groundwater investigations.

He is a section manager in the solid and hazardous waste management business unit of the research and engineering division. Mr. Smith assists the Radian staff in the identification of business opportunities across the seven business units that comprise Radian services. In addition he coordinates all Radian business with DOD in the environmental and occupational health areas. He also participates in the marketing of Radian services to federal agencies and trade associations.

Since retiring from the USAF, Mr. Smith has been involved in a variety of projects including both environmental and health work. The emphasis has been on hazardous waste. They have included assistance in the quality review of reports; health and safety evaluation of cement plants seeking permits to burn chemical wastes; draft environmental impact statement (EIS) on the thermal destruction of chemical wastes; review of the treatment of photographic chemical manufacturing wastes; groundwater contamination studies; RCRA impacts; and an R&D study of truck tire noise for the National Highway Safety Transportation Agency.

He was the certified industrial hygienist (IH) and an environmental consultant for A.T. Kearney Management Consultants. In addition to the routine occupational safety and health activities he specialized in the interpretation and response to the EPA RCRA regulations.

For three of the last four years in his assignment with Headquarters USAF, he was responsible for air, land, and water pollution management programs. This included programming an average of \$19 million per year. Also included were: the implementation of RCRA; the initial USAF Installation Restoration Program (IRP, equivalent to CERCLA-Superfund); management of 17 million acres of natural resources; and the National Environmental Policy Act (NEPA) environmental impact analysis program. In addition to these activities, he assumed responsibility for one year for all of Environmental Planning. This included: comprehensive base planning; the Air Installation Compatibility Use Zone plans for acquiring land near bases with high noise or accident potential; and the development of environmental methodologies.

At the Air Force Systems Command, Mr. Smith organized an office to address effects of the federal environmental laws on the Research, Development and Acquisition programs. (This office was the highest level environmental

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activity ever established at a USAF major command.) He directed almost all of the EIS's issued by the USAF in this period. He was an expert witness for the federal government. One was a suit over the health hazards associated with the siting of new type radar stations in California and Massachusetts. The other pertained to an EIS for new facilities in Colorado. Additionally, he was responsible for advising on the industrial hygiene and environmental needs of government owned contractor operated (GOCO) industrial plants.

During his assignment to the Pacific Air Force, Mr. Smith provided environmental and industrial hygiene guidance to USAF activities in Korea, Japan, Taiwan, Vietnam, Thailand, Philippine Islands, Guam, Trust Territories, and Hawaii. This included the traditional areas of sanitary engineering (water supply, treatment, and distribution; waste collection, treatment, and disposal; and pest control). It also included more modern problems, such as LASER equipment calibration, maintenance, and use; handling of large volumes of herbicides; noise control; industrial hygiene; heat and cold extremes; decontamination and quarantine of equipment to prevent introduction of foreign fauna or flora into the U.S. from Asia. For four years, Mr. Smith was a member of the United States delegation to the South East Asia Treaty Organization (SEATO) Military Committee. He represented the U.S. with regard to public health engineering policies. Mr. Smith also evaluated USAF civic action programs to provide basic water and waste disposal to rural Thai villages.

Other USAF assignments in various commands provided environmental engineering and industrial hygiene support for the combat Air Force. Many of the previously mentioned activities were carried out as well as support for the current priority preventive medical activities. Some examples of the latter would be: defense against accidental release or delivery and use of chemical agents; improved water treatment plant operations; improved wastewater facilities and operations; conversion of dumps to sanitary fills; substitution of less toxic materials; and engineering control of working exposures.

CERTIFICATIONS/REGISTRATIONS AND PROFESSIONAL SOCIETIES:

Certified Industrial Hygienist by the American Board of Industrial Hygiene,
1971, No. 690

Certified Safety Professional by the Board of Safety Professionals of the
Americas, 1972, No. 2103

Registered Professional Engineer, State of Massachusetts, 1963, No. 19021
Diplomate, American Academy of Environmental Engineers, 1980.

American Industrial Hygiene Association (National and Baltimore-Washington)

American Conference of Government Industrial Hygienists

National (and Maryland) Society of Professional Engineers

American Academy of Industrial Hygiene

American Academy of Environmental Engineers

American Defense Preparedness Association

Air Force Association

Society of Military Engineers

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THOMAS W. GRIMSHAW

EDUCATION:

Ph.D., Geology, University of Texas at Austin, 1976.

M.S., Geology, University of Texas at Austin, 1970.

B.S., Geological Engineering, South Dakota School of Mines and Technology, 1967.

EXPERIENCE:

Program Manager, Radian Corporation, Austin, TX, 1984-Present.

Division Manager, Policy and Environmental Analysis Division, Radian Corporation, 1982-1984.

Department Head, Environmental Analysis Department, Radian Corporation, 1978-1982.

Group Leader, Radian Corporation, 1976-1978.

Teaching Assistant, The University of Texas at Austin, 1974.

Captain (R&D Coordinator), U.S. Army, 1970-1972.

Geologist, Junior Grade, Amoco Production Company, 1969-1970.

Geologic Field Assistant, Amoco Production Company, 1967.

Certification: AIPG Certified Professional Geologist No. 4425

FIELDS OF EXPERIENCE:

As Program Manager at Radian, Dr. Grimshaw has overall responsibility for the technical, fiscal, and schedule aspects of several solid/hazardous waste, ground-water, and other environmental projects. For these projects, he serves as the primary point of contact for the clients sponsoring the work.

Dr. Grimshaw is also responsible for marketing and preparing proposals for Radian services in a variety of areas, including solid/hazardous waste site investigations, remedial action planning and implementation, ground-water contamination studies, multidisciplinary environmental studies, and reclamation investigations.

Most recently, Dr. Grimshaw has served as Program Manager (PM) for solid/hazardous waste disposal investigations at seven U.S. Air Force bases in Texas,

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Oklahoma, Louisiana, and New Mexico. These projects, which are being performed for the USAF Occupational and Environmental Health Laboratory, Brooks AFB, Texas, are an integral part of the Air Force Installation Restoration Program. Each investigation includes soil sampling and analysis, monitor well installation, and surface water sampling and analysis. The resulting data are interpreted in terms of degree of soils, ground-water, and surface-water impacts, and recommendations are made for investigations for defining remedial measures to be undertaken.

Also for the Air Force, Dr. Grimshaw is PM for wastewater investigations at Kelly AFB and Laughlin AFB, Texas. The study at Kelly AFB is to determine the source and characteristics of industrial wastewater and other inflows to the storm sewer system and to make recommendations for redirecting these flows to the industrial wastewater treatment plant. The investigation at Laughlin AFB is a comprehensive evaluation of the effectiveness of the existing wastewater treatment system accompanied by recommendations for required changes to the system.

Dr. Grimshaw is also PM for an ongoing task order contract for a large IBM manufacturing plant in Austin, Texas. This contract is for sampling, analysis, and related services for ground-water monitor wells, wastewater streams, and other sources in the plant.

For a major law firm in Kansas City, Missouri, Dr. Grimshaw is serving as PM for a program to provide Expert Witness and corollary services related to a hazardous waste disposal site in Kansas City. A lawsuit has been filed against the four largest Potentially Responsible Party generators and the owner/operator by the U.S. Department of Justice (who received the case by referral from the U.S. Environmental Protection Agency). Radian is working with the law firm representing the former owner/operator of the site.

Expert support is being provided in the following areas: 1) oversight of Remedial Investigation and Feasibility Study activities by the U.S. EPA and the PRP generators; 2) review of depositions and recommendations for line of questioning by the attorneys; 3) support of automation of disposal records with the objective of developing a basis for allocation of investigation and clean-up costs; 4) prepare and give technical presentations on the case to the attorneys involved; and 5) prepare and execute work plans to on-site technical studies to be undertaken at the site.

The Western Company of North America, Fort Worth, Texas is an oil field servicing firm whose operations generate hazardous wastes. Dr. Grimshaw is PM for a program being performed for the Western Company to achieve compliance with Texas Department of Water Resources regulations at three of their sites in Kermit, Odessa, and Rankin. Activities for this program to date have included preparation of a Plan of Action for obtaining compliance and a Waste Analysis plan, both of which have been submitted to TDWR for approval.

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Dr. Grimshaw is PM for a site investigation and remediation for a pesticide-contaminated site in Arizona owned by University Financial Investors Corporation. This project has included soil sampling and analysis for pesticides, remedial plan preparation, and presentations to state and EPA regulatory authorities.

Dr. Grimshaw has served as Technical Coordinator for over 40 risk assessment surveys for Environmental Impairment Liability (EIL) insurance policies. The purpose of these surveys is to provide EIL insurance underwriters the data needed for assessing the risks involved in providing insurance coverage for the facilities surveyed. Dr. Grimshaw also personally performed six EIL surveys involving facilities at more than 30 locations around the country. These facilities included a hazardous waste landfill, numerous industrial and municipal wastewater treatment plants, a municipal landfill, an aluminum forging plant and a casting plant, a magnet wire production facility, and several paper mills.

Dr. Grimshaw was Project Director for an investigation of an unpermitted disposal site located near Dallas, Texas. This project, which was performed for a major law firm in Dallas, included extensive waste and soil sampling and analysis, delineation of specific sites of disposal, and recommendations for disposition of the waste materials found. Several meetings were held with the regulatory agency, the Texas Department of Water Resources.

In another investigation for the same law firm, Dr. Grimshaw was Project Director for a soil sampling and analysis and ground-water monitoring project at a PCB disposal site. The area of contamination was defined by surface and shallow subsurface soil sampling on a modified grid pattern, and two monitor wells were installed. A recommendation involving soil removal, redepositing, and pavement was made to address the PCB contamination at the site.

For a large program conducted for International Paper Company, Dr. Grimshaw served as Technical Coordinator for developing Closure Plans for impoundments at wood treatment plants in three states. This program included a full complement of studies to define the existing situation and prepare a plan of remedial action for each plant. The initial activity was the sampling and analysis of pond supernatant and sludge, subsoil, and ground water. Bench-scale stabilization studies were performed on the sludge using a number of candidate commercial stabilizing compounds. Several closure alternatives were developed and screened, and a set of alternatives was selected for inclusion in conceptual plans. After the conceptual plans were approved by the client and the regulatory agencies, a detailed design was prepared and specifications developed.

For Tuloma Energies, Inc., Radian performed a program directed by Dr. Grimshaw for development of a commercial Hazardous Waste Management Facility in north-

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eastern Oklahoma. During the initial phases of this project, a market analysis was performed to determine the sources at waste that could potentially use the new facility. Subsequently, a regional screening analysis was performed to identify areas most likely to have suitable sites for the new facility. This analysis included screening for several factors, including hydrologic, geologic, topographic, ecologic, and aerometric characteristics as well as population density. Dr. Grimshaw assisted Tuloma Energies in coordinating with the state regulatory agency (Oklahoma Department of Health) during the initial phases of the project.

Dr. Grimshaw was Project Director for two programs for International Paper Company to evaluate the potential risk of proposed solid waste management plans for paper mills in Arkansas and Mississippi. These programs included collection of waste, soil, and ground-water samples, analysis of the wastes, and batch extraction of the wastes followed by analysis of the leachates. In addition, leachates were generated and attenuated in waste and soil columns to evaluate the capacity of the subsoil to attenuate any leachate that might escape from the disposal site. A ground-water flow model was used to assess the rate and direction of contaminant movement if contaminants were to reach the water table.

Dr. Grimshaw was Technical Director for a generic environmental assessment of wastes from fluidized bed combustion for the U.S. Environmental Protection Agency (EPA). Emphasis was placed on potential hydrologic impacts. Both laboratory studies and field lysimeter tests were conducted in the study. The objectives were to identify and investigate key variables which determine the acceptability of FBC waste disposal and to establish a reliable empirical correlation between laboratory and field results so that better conclusions on field effects can be drawn on the basis of laboratory studies. Since the regulatory situation for FBC wastes was unclear during conduct of the program, provisions were made for both the eventuality that leachate migration will be allowed in the substrate below the landfill and that leachate escape will be controlled by liners. Interactions between leachate and representative disposal media and between leachate and several candidate liner materials were investigated in laboratory studies.

Dr. Grimshaw was also Technical Director for a program to investigate the ground-water impact of a spill of a coal-distillate liquid fuel at an SRC-II (Solvent Refined Coal) pilot plant at Fort Lewis Military Reservation near Tacoma, Pierce County, Washington. The study involved detailed coring to establish the location and extent of unsaturated zone contamination and designing and constructing a set of ground-water monitoring wells to define the extent of ground-water contamination that had occurred. Analytical chemistry support was provided for Resource Conservation and Recovery Act (RCRA) Extraction Procedure testing of contaminated soils and for ground-water quality evaluation. A Remedial Measures Plan was formulated and implemented to remove

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contaminated material and to prevent the further spread of ground-water contamination. This program involved extensive coordination and interfacing with the states regulatory authority (Washington Department of Ecology).

In a follow-up program for which Dr. Grimshaw was again Technical Director, Radian evaluated the overall hydrogeologic impact of the entire SRC plant in addition to the spill area. This program again involved soil sampling, extraction, and analysis as well as water quality monitor well installation and sampling. A zone of contamination was identified, and a comprehensive Remedial Measures Plan was prepared to address the problem.

In a program for Utah International, Incorporated, Dr. Grimshaw was responsible for evaluating the implications of RCRA on the company's mining operations under various regulatory scenarios. Special reference was made to UI's proposed Springer Mine which is in Pershing County, Nevada. Several issues concerning the application of RCRA regulations to metal mines emerged, including the applicability of the procedure for classifying solid waste as hazardous or non-hazardous.

Dr. Grimshaw was Technical Director for a project to investigate the environmental feasibility of disposing of flue gas desulfurization (FGD) wastes, ash and sludge, from a mine mouth power plant by backfilling into the associated surface mine in northwestern Colorado. He also had major supervisory and hydrogeologic interpretation roles in the second phase of the program, which included extensive field studies. These field studies included infiltration tests of the mine floor and overburden, water balance investigations to estimate ground-water recharge, and emplacement of piezometers to ascertain the direction of ground-water flow. A major output of this program was a rating of the various parts of the large surface mine in terms of suitability for ash and sludge disposal.

Dr. Grimshaw was a Task Leader in a program for the EPA ground-water laboratory (Robert S. Kerr Environmental Research Laboratory) to investigate a technique for identifying sources of nitrate ions in ground waters and soils using stable nitrogen isotopes. The usefulness of nitrogen isotope ratios for differentiating sources of nitrate pollution (septic tanks, feedlots, barnyards, and lands receiving municipal waste waters) was evaluated. Standard statistical techniques were used to analyze the observed variations in nitrogen isotope values, with respect to several nitrate-ion sources and various environmental factors.

For a comprehensive environmental assessment for Shell's Milam Mine near Rockdale, Texas in Texas, Dr. Grimshaw prepared and conducted an aquifer test program. These efforts included design of the pump wells and piezometers, layout of the well configuration in the field, oversight of well drilling operations, conduct of the two pump tests, and interpretation of the results in terms of the basic aquifer parameters. In another project related to this mine,

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Dr. Grimshaw was responsible for evaluating the potential effects on ground water resulting from disposal of ash and FGD solids from a power plant by emplacement of the wastes in the mine.

Dr. Grimshaw has directed or prepared parts of numerous multidisciplinary environmental investigations. The major projects of these type are as follows:

- o EIS for Improvement of the City of San Antonio Wastewater Treatment System
- o EIS for Upgrade of the City of Greensboro, NC Wastewater Treatment System
- o EA for the Sandow Four Lignite-Fired Generating Station, Milam County, Texas
- o Preliminary EA for a Proposed Lignite Mine in Henderson and Anderson Counties, Texas
- o Hydrology-Related Regulatory Risks for Lignite Mining at the Deadwood-Shiloh Prospect, Texas and Louisiana
- o EA for a Proposed Olefins Complex near Sweeney, Texas
- o Environmental Audit of the Geokinetics In-Situ Oil Shale Operation, Uintah County, Utah
- o Environmental Support Studies for a New Coal Gasification Facility at the Celanese Chemical Plant, Bishop, Texas
- o Environmental and Reclamation Support Studies for a Proposed Lignite Mine in Freestone County, Texas

Prior to his employment by Radian Corporation, Dr. Grimshaw was employed as an oil and gas exploration geologist by Amoco Production Company, Denver, Colorado. Initially, he was a geologic field assistant near the coast of the Gulf of Alaska. This work entailed measuring, describing, and collecting stratigraphic sections in the Tertiary rocks in the vicinity of Cordova and Cape Yakataga, Alaska. Subsequently, Dr. Grimshaw was involved in a gas and petroleum exploration program in north central Montana. Most of the effort was in working out the stratigraphy and structural geology in the area of investigation, and he served for a time as well-site geologist on gas exploration wells. In addition, he launched a program of regional exploration in a much larger area in Montana. This work included study of down-hole geophysical logs, preparation of structural contour maps, and assembly of isopachous maps.

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HONORARY AND PROFESSIONAL SOCIETIES:

Sigma Xi, Phi Kappa Phi, Sigma Tau, Sigma Gamma Epsilon, Geological Society of America, American Association of Petroleum Geologists, Association of Engineering Geologists.

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TOBIN K. WALTERS

EDUCATION:

B.S. Geology, University of New Mexico, Albuquerque, NM 1980.

EXPERIENCE:

Hydrogeologist, Radian Corporation, Austin, TX, 1984-Present.

Hydrogeologist, Energy and Minerals Dept., Santa Fe, NM 1982-1984.

Geologic Consultant, Ville Nueve Resources, Toronto, Canada 1981-1982.

Exploration Geologist, Occidental Minerals Corp., Lakewood, CO 1980-1981.

Hydrologic Field Assistant, USGS, WRD Albuquerque, NM 1979-1980.

FIELDS OF EXPERIENCE

At Radian, Mr. Walters has had extensive experience in studies relating to groundwater hydrology, waste disposal, and environmental impacts. His work has included acquisition of groundwater data, assessment of water quality impacts and assessment of geologic and hydrologic environments based upon drill hole information, field tests and existing literature.

Recently, Mr. Walters completed a fly ash investigation with Radian in western New Mexico to assess the hydrologic impacts of ash disposal in the area. The first phase of the study involved setting up a grid coordinate system and shallow coring the ash body to define the areal extent of the ash. Monitor wells were then installed up-gradient and down-gradient from the ash body. An aquifer test of the ash body and attenuating media adjacent to the ash was performed to determine the aquifer characteristics of the transporting media. A report detailing field and laboratory results including Whole Sample, ASTM leach, and RCRA leach analyses was prepared for the client and incorporated into the permit application.

On another mine hydrology project, Mr. Walters provided hydrologic modeling services to a surface coal mine by analyzing pit inflow to the mine over a 25-year period. Mr. Walters selected a finite-difference, steady-state groundwater model for the study. The model is also used by the Office of Surface Mining regulatory agency (OSM) to define steady-state confined flow to mine pits. Using the model, Mr. Walters assessed the probable hydrologic consequences of extracting coal from the mine pit over a period of 25 years. The results of the hydrologic study were incorporated into the mine permit application.

Previously, Mr. Walters and other Radian geologists directed a groundwater monitoring investigation of an abandoned oil refinery in southern California.

Tobin K. Walters

to characterize the water quality, extent of contamination and establish the flow direction beneath the refinery. Mr. Walters supervised the installation of monitor wells and assisted in sampling the wells for organic and inorganic compounds. The results of the investigation were used by the client to respond to applicable State and Federal regulations pertaining to hazardous waste monitoring and waste removal operations.

Mr. Walters was Project Director for a Phase II hydrogeologic investigation of multiple waste disposal sites at Cannon AFB, Clovis, New Mexico. The purpose of the investigation was to determine if environmental contamination had resulted from waste disposal practices, fuel spills/leaks and fire training activities at the base. Four groundwater monitor wells were installed into the upper saturated portion of the Ogallala Aquifer and analyzed for contaminants. In addition, 130 soil samples were collected using a hollow stem auger and split spoon sampler from 16 suspected disposal sites at the base. The results of the field investigation were incorporated into a Phase II report by Radian staff under the direction of Mr. Walters.

During the summers of 1984 and 1985 Mr. Walters participated in a similar Phase II study at McClellan AFB, California. His responsibilities included supervising the installation of shallow and deep monitor wells off-base, and down-gradient from suspected base disposal areas. He logged samples and obtained water samples from semi-confined water-bearing zones. His other responsibilities were to secure drilling permits and access agreements from City, County and State authorities prior to start-up operations, and to conduct well inventories of residences near the base.

A hydraulic components manufacturing plant in Joplin, Missouri, contracted Radian to supervise the installation of four RCRA wells and to sample groundwater beneath two leaky waste oil treatment lagoons and several tanks containing cyanide and chromium enriched wastewater. Based upon existing geologic maps and drill-hole information gathered during the well installation phase of the study, it was discovered that the area west of the waste management area was the site of an abandoned underground mine. Mr. Walters expanded the drilling program to include an investigation of the mine (abandoned) and installed two additional wells in the mine zone. The results of the study were made available to the company which it used to proceed with closure activities at the waste site.

Mr. Walters is currently working on a groundwater investigation of a former small arms manufacturing plant near Denver, Colorado. The study involves the installation of four monitor wells in a upgradient and down-gradient configuration adjacent to the site and the collection and soil, water and lake bottom sediment samples. The results of the investigation will be forwarded to the Army Corps of Engineers.

Mr. Walters has participated in other groundwater investigations in Utah, Texas, Oklahoma and California for Radian Corporation.

Tobin K. Walters

Previously, Mr. Walters worked as a hydrogeologist with the Energy and Minerals Department in New Mexico. His main responsibilities were to review hydrology sections of mine permits from coal mines operating, or seeking to operate in New Mexico. He also enforced State mining regulations. During his term with the State, he inspected and issued permits to all coal mines operating on private and State-owned land. In addition, he assisted the Office of Surface Mining in conducting hydrologic investigations, environmental assessments and cumulative hydrologic impact assessments of coal mines. While at the State he served on the Governor's Hydrologic Task Force. The task force served as advisor to the Secretary of the Energy and Minerals Dept. who developed policy and guidelines pertaining to water use in New Mexico.

As a geologic consultant, Mr. Walters worked in the Gold-Arsenic Belt of Central Nevada where he mapped gold-bearing properties and supervised close-spaced drilling programs to prove claims and develop ore reserve estimates of ore. He supervised several other base and precious metal exploration projects in Arizona and New Mexico. As a consultant, Mr. Walters was also responsible for restoring roads and drill sites, and filing mining claims with appropriate County officials.

After graduating from the University of New Mexico, Mr. Walters worked as an Exploration Geologist for Occidental Minerals Corporation in Lakewood, Colorado. His duties included supervising field activities for an intensive uranium exploration project in New Mexico and Arizona. He mapped sedimentary rocks and logged cuttings and core. While at Oxy, he was also trained in underground safety and worked briefly underground as an ore-grade geologist.

While attending the University of New Mexico, Mr. Walters worked part-time for the United States Geological Survey as a Hydrologic Field Assistant. He assisted in coding in data for a finite-difference, steady-state hydrologic model of a southwest alluvial basin in New Mexico. Mr. Walters developed a working understanding of Tertiary Age sediments in the Rio Grande Basin as part of his training with the USGS, and developed a trilinear facies classification system of sediments in the Basin.

HONORARY/TECHNICAL SOCIETIES

Association of Ground Water Scientists and Engineers

PUBLICATIONS

Walters, T.K., Little, W.M., "Geohydrologic Investigation of an Abandoned Oil Refinery in Southern California - Phase II," Radian Corporation, Austin, TX, November, 1985.

Walters, T.K., et al., "Installation Restoration Program Phase II - Confirmation/Quantification Stage I, Cannon AFB, New Mexico," Radian Corporation, Austin, TX, June, 1985.

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Walters, T.K., "Pit Inflow Analysis of a Western Coal Mine in New Mexico," Radian Corporation, Austin, TX, December, 1985.

Walters, T.K., "Fly Ash Waste Site Investigation near Farmington, New Mexico," Radian Corporation, Austin, TX, December, 1985.

Radian Corporation, "Installation Restoration Program Phase II - Confirmation/Quantification Stage I, McClellan AFB, California," Radian Corporation, Austin, TX, July, 1984.

Radian Corporation, "Technical Analysis for McKinley Mine, McKinley County, New Mexico," Radian Corporation, Austin, TX, October, 1984.

Floyd, M.P. and Walters, T.K., "Hydrogeologic Investigation of a Hydraulic Components Facility," Joplin, MO, Radian Corporation, August, 1984.

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CORPORATION

DEBRA L. RICHMANN

EDUCATION:

M.A., Geology, University of Texas at Austin, 1977.

B.A., Geology, University of Minnesota, 1974.

EXPERIENCE:

Staff Geologist, Radian Corporation, Austin, TX, 1981-Present.

Research Scientist Associate II, Bureau of Economic Geology, University of Texas at Austin, 1979-1981.

Technical Research Assistant, American Petroleum Institute, 1976-1979.

Research Assistant, Bureau of Economic Geology, University of Texas at Austin, 1976.

Teaching Assistant, Department of Geological Sciences, University of Texas at Austin, 1974-1976.

FIELDS OF EXPERIENCE:

As a staff geologist at Radian, Ms. Richmann has participated in projects requiring a broad range of geological/hydrological assessments. She has served or is serving in a supervisory capacity on several projects funded by the U.S. Air Force as part of their Installation Restoration Program (IRP). She was Project Director for the Phase I Records Search at Reese AFB, Texas, and for the Phase II Stage 1 Field Evaluation at England AFB, Louisiana.

Phase I of the IRP involves review of available data and conduct of interviews with former and present base personnel and regulatory officials to determine if past waste management practices have resulted in potential environmental contamination. Phase I culminates with a report that identifies sites determined to pose a significant potential risk to human health or the environment and provides recommendations for Phase II studies.

The emphasis of Phase II IRP studies is on sampling all potentially impacted environmental media and analysis for selected indicator parameters. The objective of Phase II is to define the extent of environmental contamination, if any.

In other IRP work, Ms. Richmann was a supervising geologist for monitor well/deep soil boring installation in the Cannon AFB, New Mexico Phase II Stage 1 program. She was task leader for the well inventory action and a supervising

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geologist during monitor well installation included in Phase II activities at McClellan AFB, California. She supervised ground-water monitor well installation and collected samples during Phase II activities at Kelly AFB, Texas.

From 1981 through 1983, Ms. Richmann had major involvement in an EPRI-sponsored program to evaluate limestones as wet scrubbers in flue gas desulfurization (FGD) systems. She was task leader for the chemical and physical analysis, geological survey and sampling, and subset analysis tasks. Selected limestones were described in detail on macroscopic and microscopic scales to relate mineralogical and textural variation to grindability, reactivity, and other parameters of significance to FGD applications. She also served as Project Director for the related FGD Reagent Mapping project and is currently directing a follow-on study of the applicability of low-quality limestones in FGD systems.

Mr. Richmann was Project Director for an environmental scoping study at an inactive Cu-smelter site near Salt Lake City, Utah. The site is being considered for proposed inclusion on the Superfund NPL due to the presence of stockpiled slag onsite and the potential for leachate generation and offsite migration of toxic components. A more detailed remedial investigation is pending.

Ms. Richmann was a key participant in a study funded by EPA to develop guidance for closure and remedial action at hazardous waste surface impoundments used in the wood treating industry in Florida. The complex regional combinations of hydrogeology, geology, soils, and surface-water hydrology were analyzed. Based on this analysis, treatment technologies and costs were developed for disposal of liquids, sludges, and contaminated soils in the various regions.

During the spring and summer of 1983, Ms. Richmann participated in an EPA-sponsored program to obtain process information and collect wastewater samples at non-ferrous metals processing plants. At each of the five plants she visited, representative samples of all wastestreams that are discharged were sampled, split into analytical fractions, preserved as appropriate, and shipped to Radian and other laboratories for analysis. Resulting data are being used to assist EPA in effluent characterization and development of guidelines for each subject industry.

As part of an EPA Region V Superfund study, Ms. Richmann participated in ground-water sampling efforts in the vicinity of an inactive coal-tar distillation and wood preserving facility in St. Louis Park, Minnesota. Sampling locations were selected and samples were collected to determine the type and extent of ground-water contamination associated with the uncontrolled release of creosote from the facility.

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Field sampling to assess potential ground-water contamination of a shallow aquifer associated with an active waste disposal site in Andover, Minnesota, was also conducted by Ms. Richmann. In addition, wells were tested to determine local hydraulic conductivity of the aquifer. She has also participated in a study to sample and test soils and ground water for possible PCB contamination associated with a former industrial site in Greenville, Texas.

Ms. Richmann has participated in a number of projects evaluating potential geological constraints to proposed lignite mining and utilization facilities in the East Texas Lignite Belt. She was task leader for the topography, geology, and soils and analysis in several projects in the east and east-central regions of the lignite belt and also participated in a similar investigation of the Sabine Uplift area. These studies, conducted for private industrial clients, are designed to identify gross hydrogeological conditions that could seriously impede or prohibit development at pre-selected sites. Recommendations arising from these preliminary studies may assist in identification of alternative or preferred sites and in definition of future study requirements. Ms. Richmann has also completed a more detailed follow-up study of site-specific geological conditions related to construction of a lignite gasification facility in Robertson County, Texas for one of these clients.

In a project conducted for the Texas Energy and Natural Resources Advisory Council (TENRAC), Ms. Richmann reviewed and summarized available geologic data from the three geothermal resource regions of Texas: the Gulf Coast geopressured-geothermal, central Texas hydrothermal, and Trans-Pecos hydrothermal provinces. These summaries formed the data base from which she and other Radian team members assessed additional research needs and recommended projects for TENRAC funding considerations.

In another project, Ms. Richmann participated in a geothermal resource assessment of a lease within the Coso, California KGRA (Known Geothermal Resource Area). She evaluated test data from exploratory wells and supporting geological literature to make recommendations on sustained economic production feasibility and additional data needs.

Ms. Richmann participates in regularly scheduled certification rounds administered by EPA/RTP for bulk asbestos identification. The EPA-approved method used by Radian for bulk asbestos identification is polarized light microscopy (PLM) combined with dispersion staining (DS). Ms. Richmann has analyzed bulk samples for asbestos for schools, governmental, and private clients.

Prior to her work at Radian, Ms. Richmann participated in geopressured geothermal reservoir quality studies at the Texas Bureau of Economic Geology. Her research included detailed petrographic and geochemical investigation of Gulf Coast Tertiary sandstones and development of diagenetic models to predict

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deep secondary reservoirs suitable for geopressured geothermal energy production. Ms. Richmann analyzed over 400 thin sections during this project. Analytical techniques employed in these studies included transmitted light microscopy, X-ray diffraction, electron microprobe analysis, and scanning electron microscopy.

As a Technical Research Assistant with the American Petroleum Institute, Ms. Richmann's responsibilities included assembling technical data and preparing reports in support of litigation on behalf of the petroleum industry. Major areas of investigation included federal regulations governing petroleum exploration and production on Public Lands, and EPA's proposed Criteria and Secondary Standards for ozone and nitrogen oxides.

While working towards her Master's degree in Geology, Ms. Richmann taught the laboratory portion of courses titled Physical Geology (Geo 301) and Igneous Rocks (Geo 416L) at the University of Texas, Department of Geological Sciences. Geo 301 is an introductory level course and Geo 416L is an upper division course in which rock and mineral identification/classification and petrographic techniques are taught.

During her final summer in residence at the University of Texas, Ms. Richmann was employed as a Research Assistant for the Bureau of Economic Geology. She conducted library research and compiled data for the Texas Mineral Resource Map and Texas Mineral Atlas.

The major emphasis in Ms. Richmann's undergraduate and graduate level training was in igneous and metamorphic petrology and geochemistry. Her Master's thesis included thin section analysis and Rb-Sr isotopic age determinations of two Precambrian gneisses from the Llano, Texas region.

HONORARY AND PROFESSIONAL SOCIETIES:

Phi Kappa Phi, Sigma Gamma Epsilon, American Association of Petroleum Geologists, Geological Society of America.

PUBLICATIONS/REPORTS:

Radian Staff, "Installation Restoration Program Phase II - Confirmation/Quantification Stage 1, England AFB, Louisiana," Radian Corporation, Austin, TX, February 1985.

Radian Staff, "Installation Restoration Program Phase I - Records Search, Reese AFB, Texas," Radian Corporation, Austin, TX, April 1984.

Radian Staff, "Installation Restoration Program Phase IIB Field Evaluation, Kelly AFB, Texas," Radian Corporation, Austin, TX, March 1984.

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Machin, J.L. and D.L. Richmann, "Guidance for Closure and Remedial Action at Hazardous Waste Surface Impoundments - Wood Treatment Industry," Radian Corporation, Austin, TX, January 1984.

Richmann, D.L., K.W. Luke, and J.C. Terry, "Flue Gas Desulfurization Chemistry Studies: Limestone Grindability, Volume II: Grindability Testing," EPRI CS-3618 RP 1031-4, Electric Power Research Institute, Palo Alto, CA, July 1984.

Richmann, D.L., J.P. Rossi, and E.B. Rashin, "Flue Gas Desulfurization Chemistry Studies: Limestone Grindability, Volume I: FGD Reagent Mapping," EPRI CS-3618 RP 1031-4, Electric Power Research Institute, Palo Alto, CA, July 1984.

Kaiser, W.R. and D.L. Richmann, "Predicting Diagenetic History and Reservoir Quality in the Frio Formation of Brazoria County, Texas and Pleasant Bayou Test Wells," Proceedings - Fifth United States Gulf Coast Geopressured-Geothermal Energy Conference, Baton Rouge, LA, pp. 67-74, 1981.

Davis, R.J., M.F. Conover, R.C. Keeney, M.L. Personnet, and D.L. Richmann, "Texas Geothermal RD&D Program Planning Support Document," Radian Corporation, Austin, TX, August 1981.

Kaiser, W.R., K. Magara, K.L. Milliken, and D.L. Richmann, "Petrography, Water-Rock Interaction, and Caprock Distribution as Potential Indicators of Secondary Porosity in the Frio and Vicksburg Formations of Texas" (abstract), GSA South Central Section Annual Meeting, San Antonio, TX, 1981.

Kaiser, W.R., K. Magara, K.L. Milliken, K.L., and D.L. Richmann, "Sandstone Consolidation III Year End Report (1980)," Geothermal Energy, U.S. Department of Energy, DOE/ET/27111-2, 14 p. + figs., 1981.

Loucks, R.G., D.L. Richmann, and K.L. Milliken, "Factors Controlling Reservoir Quality in Tertiary Sandstones and Their Significance to Geopressured Geothermal Production: Report of Investigations No. 111," Bureau of Economic Geology, University of Texas at Austin, 41 p., 1981.

Richmann, D.L., "Diagenesis of Vicksburg Sandstones, McAllen Ranch Field, Hidalgo County, Texas" (abstract): South Texas Geological Society Newsletter, November 1980.

Richmann, D.L., K.L. Milliken, R.G. Loucks, and M.M. Dodge, "Mineralogy, Diagenesis, and Porosity in Vicksburg Sandstones, McAllen Ranch Field, Hidalgo County, Texas," Transactions of the Gulf Coast Association of Geological Societies, v. 30, p. 473-481, 1980.

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Debra L. Richmann

Loucks, R.G., D.L. Richmann, K.L. and Milliken, "Factors Controlling Porosity and Permeability of Geopressured Frio Sandstone Reservoirs, General Crude Oil/Department of Energy Pleasant Bayou Test Wells, Brazoria County, Texas," Proceeding - Fourth United States Gulf Coast Geopressured-Geothermal Energy Conference: Research and Development, v. 1, p. 46-82, 1980.

Garrison, J.R., L.E. Long, D.L. and Richmann, "Rb-Sr and K-Ar Geochronologic and Isotopic Studies, Llano Uplift, Central Texas," Contributions to Mineralogy and Petrology, v. 69, p. 361-374, 1979.

Richmann, D.L. and J.M. King, "Comments on Section 8.2: Effects of Nitrogen Oxides on Vegetation" in EPA's Draft Nitrogen Oxides Criteria Document, API Staff Report submitted to EPA, 1979.

Richmann, D.L. and J.M. King, "A Review of EPA's Proposed Secondary NAAQS for Ozone, Based on Effects on Vegetation," API Staff Report submitted to PCO/NO_x Steering Committee, 1978.

Richmann, D.L. and J.M. King, "Relative Ozone Sensitivity of the 15 Species/Cultivars Chosen by Larsen and Heck to Evaluate Their Foliar Injury Prediction Model: Appendix F" in Comments of the American Petroleum Institute and Member Company Petitioners on Proposed Revisions to Their Air Quality Criteria, National Ambient Air Quality Standards and Control Program Regulations for Photochemical Oxidants (Ozone), EPA Docket No. OAQPS 78-8, 1978.

Everett, A.G., L.R. Smith, D.L. Richmann, J.R. and Gill, "Public Lands Project" (Draft Final Report), American Petroleum Institute, Washington, DC, 95 p. + Appendices, 1977.

Garrison, J.R., L.E. Long, and D.L. Richmann, "New Geochronologic and Isotopic Studies, Llano Uplift, Central Texas" (abstract), GSA Cordilleran Section Annual Meeting, Tempe, AZ, 1977.

Richmann, D.L., "Rb-Sr Ages of the Red Mountain and Big Branch Gneisses, Llano Uplift, Central Texas," M.A. Thesis, The University of Texas at Austin, 51 p., 1977.

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WILLIAM L. BOETTNER

EDUCATION:

Graduate studies, Geological Sciences, The University of Texas at Austin, Austin, TX, 1981-83.

B.A., Geology, The University of Texas at Austin, Austin, TX, 1977.

EXPERIENCE:

Geologist, Radian Corporation, Austin, TX, 1984-Present.

Geologist, U.S. Geological Survey, Water Resources Division, Austin, TX, 1979-84.

Consulting Geologist, Roswell, New Mexico, 1978-79.

Geotechnical Engineering Technician, F.G. Bryant & Associates, Austin, TX, 1971-1975.

FIELDS OF EXPERIENCE:

As a geologist at Radian, Mr. Boettner participates in a broad range of hydrogeological investigations both as a technical staff member and in a supervisory capacity.

Mr. Boettner is currently Project Director for an extensive geotechnical and environmental investigation for a commercial client. The investigation is to assess the effectiveness of current waste management practices in protecting a major ground water system.

Mr. Boettner is also currently a Task Leader for an innovative experimental field test to evaluate the in situ neutralization of a chlorinated camphene pesticide. The project involves using anaerobic microbial action to enhance natural degradation of pesticide residues under field conditions.

During the first part of 1985, Mr. Boettner was the supervising geologist for a vapor monitor well installation program at the Chevron, U.S.A./El Segundo Refinery located in Los Angeles, California. The project is an investigation of the potential extent of a hydrocarbon plume in the subsurface. The installation effort occurred under intense public and governmental scrutiny and was completed ahead of schedule.

Mr. Boettner participated as a team member in conducting field investigations of various hazardous waste sites at McClellan Air Force Base in Sacramento, California, and Cannon AFB in Clovis, New Mexico. These efforts are part of

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the Air Force's Installation Restoration Program (IRP) and involved the installation of monitoring wells and hazardous waste site soil sampling for chemical analysis. The results will be used to define the site hydrogeology and waste site impacts, if any, on the local ground-water system.

While a geologist with the United States Geological Survey, Mr. Boettner researched and developed a two-dimensional finite-difference model for the computer simulation of the Edwards Limestone Aquifer, a large regional aquifer in Central Texas. He collected drilling samples and conducted aquifer tests which were used to construct the conceptual framework for the ground-water simulation. The results of the computer model and its utility as a management tool were presented in a Water Resources Investigation report for the U.S. Geological Survey.

Mr. Boettner conducted a 6-month hydrogeological mapping project for the U.S. Geological Survey which resulted in a field delineation of the extent of the Edwards Aquifer in Central Texas. While acting in the capacity of project leader he supervised 5 other geologists in mapping and sample collecting. The project developed an in-depth understanding of the contribution of the surface water drainage system to the regional and local ground water system. The final report and maps are currently being used by state and local regulatory agencies to manage the resources of the ground-water system.

In the area of mining hydrology, Mr. Boettner researched and wrote a case study for the U.S. Bureau of Mines, Bureau of Land Management and the U.S. Geological Survey on the potential impacts of lignite coal mining on the hydrologic systems of the state of Texas. The study included both the social and technical costs associated with such development along with recommendations for development within regulatory guidelines.

During studies on ground-water contamination in the Hueco Bolson Aquifer of El Paso, Texas, Mr. Boettner discovered the migration of an irrigation leachate plume. Further studies by Mr. Boettner identified the source and extent of the contamination problem. The extent of the problem was evaluated through the installation of monitoring wells both upgradient and downgradient from the leachate source. Remedial action was recommended and the contamination problem was neutralized.

As a consulting geologist in New Mexico, Mr. Boettner worked with numerous ranching, agricultural and small communities on studies to improve the existing ground and surface water sources as well as the installation of new water development systems.

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As a geotechnical engineering technician with F.G. Bryant and Associates, Mr. Boettner was responsible for supervising drilling crews in the acquisition of core samples and downhole logging. These field tasks took him to New Mexico, Oklahoma, Colorado, Louisiana, Arkansas and Pennsylvania. As a registered ASTM technician he performed engineering analytical procedures in a soils and materials testing laboratory. Mr. Boettner assisted in preparation of more than 100 reports to clients under company cover.

HONORARY AND PROFESSIONAL SOCIETIES:

National Water Well Association - Division of Ground Water Scientists and Engineers
American Association of Petroleum Geologists
Society of Economic Paleontologists and Mineralogists
American Association for the Advancement of Science
American Geophysical Union
Austin Geological Society
Member, Renewable Energy Advisory Committee, Austin City Council, 1980-81
Member, Citizens Advisory Task Force on Solid Waste Management for the City of Austin, Texas, 1983-84

PUBLICATIONS/REPORTS:

Boettner, W.L. and R.M. Slade, Jr., "Computer Simulation of the Ground-Water Resources of the Edwards Aquifer in Northern Travis, Williamson and Bell Counties, Texas," U.S. Geological Survey Water Resources Investigation 85-__ (in press), June 1985.

Boettner, W.L., "The Hydrology of Lignite Mining in Texas - A Case Study," U.S. Bureau of Mines, Bureau of Land Management, and U.S. Geological Survey Special Publication 82-17, August 1982.

Boettner, W.L. and D.L. White, "Migration of an Irrigation Leachate Plume in the Hueco Bolson Aquifer, El Paso, Texas," U.S. Geological Survey Administrative Report, September 1981.

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CORPORATION

WILLIAM M. LITTLE

EDUCATION:

M. S. , Civil Engineering, University of California, Berkeley, 1974.

M. S. , Hydrology, University of Arizona, Tucson, 1968.

B. S. , Hydrology, University of Arizona, Tucson, 1967.

EXPERIENCE:

Senior Engineer and Group Leader, Radian Corporation, Austin, TX, 1982-Present.

Senior Engineer, Radian Corporation, Austin, TX, 1978-1982.

Hydrologist, U. S. Army Environmental Hygiene Agency, 1973-1978.

Research and Technical Operations Officer, U. S. Army Engineer Nuclear Cratering Group, 1969-1971.

Graduate Student in Research, University of Arizona, Tucson, 1968.

FIELDS OF EXPERIENCE:

Mr. Little is a Senior Engineer and Group Leader with a major technical specialty in ground-water pollution studies. He is currently the Project Director for hydrogeologic investigations of multiple waste disposal sites on Tinker Air Force Base, Oklahoma. He has recently completed a similar investigation for Kelly AFB, Texas. These investigations include monitoring well construction, ground-water sampling, and contaminant transport assessment. He is responsible for program design and execution, subcontractor selection, and managing and editing the final report. He is also providing technical consulting and expert witness services for a hazardous waste site cleanup case in Kansas City, Missouri.

Mr. Little has recently completed a hydrogeologic investigation of a Superfund site in western New York state. The project included monitoring well construction, definition of ground-water flow system, assessment of contaminant transport potential, and presentations to regulatory authorities. Mr. Little served as Project Director and principal investigator. He has also served as Project Director and field manager for a large, multidisciplinary characterization of an abandoned hazardous waste disposal site in southern California. The waste materials consist of acid petroleum refinery sludges. Major areas of investigation were: chemical characterization of wastes and geologic materials; quantification of sulfur dioxide and hydrocarbon emissions; and ground-water monitoring. Mr. Little was responsible for managing the field operations and supervising report preparation.

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Mr. Little has served as assistant Project Director and field manager for an investigation of the ground-water quality impact of a spill of a coal-distillate liquid at an SRC pilot plant near Tacoma, Washington. The study involved detailed unsaturated zone coring and designing and constructing a series of ground-water monitoring wells. A Remedial Measures Plan was formulated and adopted to remove contaminated materials and to prevent the further spread of ground-water contamination. Following the evaluation of the spill event, Mr. Little directed an expanded program to evaluate the ground-water quality effects of overall plant operations. The possible sources of contamination were identified and characterized. Mr. Little then developed a ground-water monitoring program and supervised the installation of the monitoring network. He designed and conducted aquifer pump tests to define aquifer performance and interpreted the results.

Mr. Little has also conducted a program to evaluate the extent of ground-water contamination by refinery operations and wastes at an oil refinery near Duncan, Oklahoma. The assessment was based on site reconnaissance, interviews with refinery personnel and a study of existing hydrogeologic and process data.

Mr. Little has recently completed two environmental/regulatory fatal flaw studies for lignite mines and associated power plants in East Texas. He was both Project Director, responsible for overall management and preparation of the final report, and hydrology task leader, responsible for assembling data on hydrologic conditions and assessing probable impacts. He has also recently served as task leader for regulations review, impact analysis and permit application preparation for a commercial-scale coal gasification facility in Wyoming and ground-water hydrology task leader for environmental analysis of a major lignite mine and associated synfuels plant in east Texas.

In another program, Mr. Little directed an evaluation of surface-water and ground-water availability in the vicinity of the proposed Solvent Refined Coal-II (SRC-II) demonstration plant and commercial facilities near Morgantown, West Virginia.

For a private industrial client, Mr. Little reviewed and evaluated the environmental monitoring data from the vicinity of an in situ coal gasification test in the Powder River Basin of Wyoming. The water quality impacts of the test burn were assessed, and a program of aquifer restoration and hydrologic testing recommended. Based on available hydrologic and geochemical data, a conceptual model of the test site was developed. He also developed a ground-water monitoring and contingency aquifer restoration program for a proposed future test. The program includes selection of well locations and parameters for monitoring and specification of restoration strategies.

Mr. Little has also participated in an assessment of the environmental behavior of fluidized bed combustion (FBC) waste for EPA, IERL. Mr. Little was responsible for the design, construction and operation of field cells for

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testing FBC waste disposal alternatives and for the development of a preliminary waste transport model. He has also been project director and hydrology task leader in the evaluation of the environmental suitability of an ash/scrubber sludge disposal site. He was responsible for the overall management of the program, evaluated the laboratory and hydrogeologic data and predicted contaminant migration.

As a hydrologist with the Water Quality Engineering Division, U.S. Army Environmental Hygiene Agency, Mr. Little served as a consultant to the Office of the Surgeon General and to major commands and installations on hydrologic aspects of water supply and wastewater disposal. He prepared design criteria for programs of effluent and receiving water monitoring at Army manufacturing and research facilities, evaluated ground-water pollution potential of waste disposal practices, and reviewed draft NPDES discharge permits issued to Army installations. He performed preliminary technical feasibility studies of land treatment of wastewater including field investigations and trial systems design. He conducted environmental impact statement data requirements review and prepared and reviewed portions of environmental impact statements. Mr. Little also managed the Army Medical Department's nationwide Drinking Water Surveillance Program.

With the Corps of Engineers, Mr. Little was assigned as a Research and Technical Operations Officer, U.S. Army Engineer Nuclear Cratering Group. There he conducted a general investigation of hydrologic transport of radionuclides from Plowshare application sites. This work included literature searches, computer simulation, experimental design and conceptual modeling of transport phenomena. He also participated in final preparation of a 1971 Corps of Engineers report on Wastewater Management in the San Francisco Bay Region.

While at the University of Arizona, Mr. Little was a member of the Operations Research Study Group on the Tucson Basin, gathering background hydrologic material, and conducting a literature and data file search. He directed and participated in preliminary adaptation of a two-dimensional, finite difference model of a large, heterogeneous ground-water basin.

HONORARY AND PROFESSIONAL SOCIETIES:

American Geophysical Union, American Water Resources Association, National Water Well Association, Sigma Xi.

CERTIFICATION:

AIPG Certified Professional Geological Scientist No. 6468.

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PUBLICATIONS/REPORTS:

Numerous technical reports in the fields of water resources development, ground-water contaminant migration, occurrence of radionuclides in ground water, land treatment feasibility and receiving water monitoring, including:

Little, W.M., et al., "Installation Restoration Program, Phase II - Confirmation/Quantification, Stage 2, Tinker AFB, Oklahoma," Radian Corporation, Draft Report to U.S. Air Force, December 1984.

Little, W.M., et al., "Installation Restoration Program, Phase II - Field Evaluation, Stage 1, Tinker AFB, Oklahoma," Radian Corporation, Draft Final Report to U.S. Air Force, November 1984.

Little, W.M., et al., "Installation Restoration Program, Phase II, Stage 1, Field Evaluation, Kelly AFB, Texas," Radian Corporation, Final Report to U.S. Air Force, July 1984.

Little, W.M., "Hydrogeologic Investigations, Facet Enterprises, Inc., Elmira, New York," Radian Corporation Final Report to Facet Enterprises, Inc., September 1983.

Little, W.M., et al., "McColl Site Investigation - Phase 1," Radian Corporation Report to the Participants Committee, November 1982.

Little, W.M., et al., "Environmental Considerations and Air Quality Modeling for the Freestone County Project," Radian Corporation Report to Tenneco Coal Company, March 1982.

Grimshaw, T.W., et al., "Assessment of Fluidized-Bed Combustion Solid Wastes for Land Disposal," Draft Final Report, Radian Corporation Report to EPA Industrial Environmental Research Laboratory, December 1982.

Little, W.M., et al., "Environmental Considerations and Air Quality Modeling for the Edgewood and Mustang Creek Prospects and Associated Energy Park," Radian Corporation Report to Tenneco Coal Company, November 1981.

Little, W.M., et al., "Ground-Water Impact of SRC Pilot Plant Activities Fort Lewis, Washington," Radian Corporation report to Gulf Mineral Resources Company, January 1981.

Little, W.M., et al., "Ground Water Modeling at an In-Situ Coal Gasification Test," Radian Corporation Report to confidential industrial client, September 1980.

Little, W.M. and H.J. Williamson, "Recommended Ground-Water Monitoring and Aquifer Restoration Programs, Future In-Situ Coal Gasification Test," Radian Corporation Report to confidential industrial client, September 1980.

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William M. Little

Little, W.M. and W.C. Micheletti, "Recommended Aquifer Restoration and Hydrologic Testing Program for an In-Situ Coal Gasification Test," Radian Corporation Report to confidential industrial client, August 1980.

Grimshaw, T.W. and W.M. Little, "Remedial Measures Plan for a Spill of Solvent Refined Coal Liquid at the SRC Pilot Plant, Fort Lewis, Washington," Radian Corporation Report to Gulf Mineral Resources Company, August 1980.

Little, W.M., et al., "Hydrologic Evaluation of a Combined Ash/FGD Sludge Storage Site, Craig Station," Radian Corporation Report to Colorado Ute Electric Association, July 1980.

Little, W.M., T.J. Wolterink, and M.H. McCloskey, "Water Availability Appraisal for the Proposed Solvent Refined Coal-II Demonstration Plant, Monongalia County, West Virginia," Radian Corporation Report to U.S. Department of Energy, February 1980.

Little, W.M., "Water Quality Geohydrologic Consultation No. 24-0286-77," Twin Cities Army Ammunition Plant, New Brighton, MN, 21-23 July 1976, U.S. Army Environmental Hygiene Agency, 11 January 1977 (six additional geohydrologic consultations).

Little, W.M., Drinking Water Consultation Visit No. 24-1301-77, Joliet Army Ammunition Plant, Illinois, 2-4 August 1976, USAEHA, 9 February 1977 (four additional drinking water consultations).

Little, W.M., Water Quality Geohydrologic Consultation No. 24-058-75/76, Land Disposal Feasibility Study, Fort Polk, Louisiana, 2-29 April and 9-29 October 1975, USAEHA, 19 August 1976 (three additional land treatment evaluations).

Little, W.M., Water Quality Monitoring Consultation No. 24-048-74/75, Aberdeen Proving Ground, Maryland, 25-27 February 1974, USAEHA, 17 December 1974 (three additional monitoring consultations).

Little, W.M., Water Quality Engineering Special Study No. 24-017-74, Mixing in Receiving Waters, 7 September-24 October 1973, USAEHA, 3 January 1974.

Little, W.M., Analysis of Hydrologic Transport of Tritium, U.S. Army Engineer Nuclear Cratering Group Technical Memorandum 70-7, Lawrence Radiation Laboratory, Livermore, CA, April 1971.

Little, W.M., An Engineering and Economic Feasibility Study for Diversion of Central Arizona Project Waters from Alternate Sites, M.S. Thesis, Department of Hydrology, University of Arizona, Tucson, AZ, 1968.

RADIAN

CORPORATION

JILL P. ROSSI

EDUCATION:

B.A. Geography, The University of Minnesota at Minneapolis, 1972.

EXPERIENCE:

Geographer, Cartographer, Policy and Environmental Analysis Division, Radian Corporation, Austin, TX, 1980-Present.

Drafting and Graphics Assistant, Dam Safety Unit, Texas Department of Water Resources, Austin, TX, 1979-1980.

Cartographer, Continental Map Inc., Austin, TX, 1978-1979.

Teaching Assistant, University College-Geology, University of Minnesota at Minneapolis, 1972.

FIELDS OF EXPERIENCE:

At Radian, Ms. Rossi is responsible for producing maps and coordinating graphics for the Environmental Analysis Division. She utilizes data from a variety of technical disciplines (geology, hydrology, noise and air monitoring, sociology, soils, and hydrogeology) to create maps which clearly and concisely illustrate the written text. Ms. Rossi has been responsible for work in the following projects:

- o Develop base maps and coordinate graphics throughout an Environmental Impact Statement prepared for the U.S. Bureau of Land Management for a central Texas lignite mine;
- o Develop color overlay method of mapping for site selection process of commercial waste disposal sites in Texas and southeastern Oklahoma;
- o Develop a series of figures used as illustrations in a manual for the Environmental Protection Agency on Remedial Actions at Uncontrolled Hazardous Waste Sites;
- o Draft maps and coordinate the graphics for an Environmental Impact Statement for a synfuels plant in Tennessee;
- o Create base and thematic maps for Air Force Installation Restoration Programs (Phase I and Phase II) for the following locations: Kelly AFB, Texas; Hill AFB, Utah; Bergstrom AFB, Texas; Cannon AFB, New Mexico; England AFB, Louisiana; Tinker AFB, Oklahoma; and Reese AFB, Texas; Carswell AFB, Texas; Sheppard AFB, Texas;

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Jill P. Rossi

- o Map limestone deposits, lime plants, and limestone quarries in the United States by county in a series of regional maps for the Electric Power Research Institute;
- o Map compliance/non-compliance with air pollution standards for all counties in the United States in a series of EPA regional maps;
- o Map concentrations of selected air pollutants in the El Paso, Texas, area for a Texas Air Control Board study in a series of quarterly and annual reports;
- o Prepare aerial photography history of a wood preserving plant for a commercial client which included extensive research of available aerial photography and interpretation of those photos to determine historical features of interest;
- o Prepare complex permitting schedules for proposed mines, energy facilities, and hazardous waste handling facilities;
- o Preparation of base and thematic maps for various feasibility studies, fatal flaw analyses, Environmental Information Documents, and Environmental Impact Statements;
- o Identify, field verify, and map oil and gas development features within the Big Thicket National Preserve for the National Park Service; and
- o Research of available map resources, aerial photography, remote sensing products, and mapping technologies as required by individual client needs.

While with the Texas Department of Water Resources, Ms. Rossi worked in the graphics section of the Dam Safety Unit, a federal grant program. She prepared maps and exhibits, and laid out phototypset text into camera-ready form according to standards, developed with her assistance, for the technical reports written by the engineering section.

During her employment with Continental Map Incorporated, Ms. Rossi was involved in all phases of four color map production. These included source information procurement and classification, imaging of base maps, scribing plates, cutting specialties, sizing and adhering type, designing customer copy panels, indexing streets and points of interest, photo-lab contact reproducing of base plates, and the final compositing of the four negative plates to be sent to the printer. These maps included large metroplex areas, counties, enlarged downtown sections, and simplified principle city thoroughfares.

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While employed by the University of Minnesota as a Geology Teaching Assistant, Ms. Rossi taught geology laboratory sessions, prepared geology lab work materials, tutored students, and assisted the professors by preparing classroom presentations and grading and proctoring exams.

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APPENDIX L
Surveyor's Report

P.O. BOX 807
CLOVIS, NM 88101
(505) 762-3716

PETTIGREW & ASSOCIATES



RICHARD R. PETTIGREW, P.E.-L.S.

February 26, 1985

P.O. BOX 5769
HOBBS, NM 88241
(505) 393-9827

Radian Corporation
P. O. Box 9948
8501 Mo-Pac Blvd.
Austin, Texas 78766

ATTENTION: MR. TOBIN K. WALTERS
Hydrogeologist
Earth Science and Ecology Dept.

Dear Mr. Walters:

Attached please find the information requested concerning Radian's monitoring wells at Cannon Air Force Base, New Mexico. Please note the one (1) foot difference in elevation on Well "C". The previous elevation given to you by Mr. Tivis was incorrect. We regret we do not have a reproducible on which to plat this information.

If we can be of further service, please do not hesitate to contact this office.

Respectfully Submitted,

PETTIGREW & ASSOCIATES

[Signature]
Richard R. Pettigrew, P.E.-L.S.

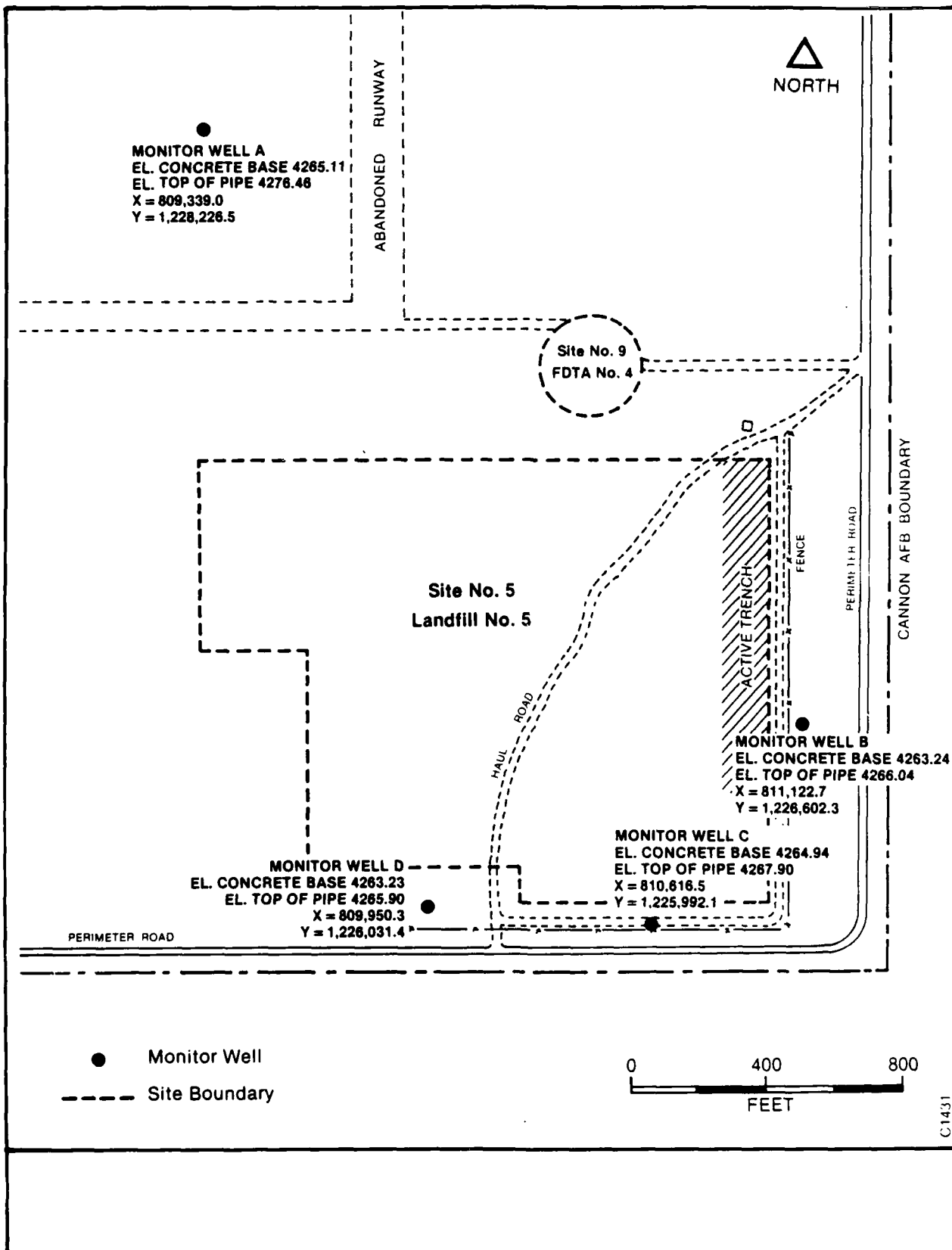
RRP:d

attach.

CANNON AIR FORCE BASE, NEW MEXICO

RADIAN CORPORATION
MONITOR WELL LOCATIONS

<u>Well Designation</u>	<u>COORDINATES</u>		<u>ELEVATION-M.S.L.</u>	
	<u>X</u>	<u>Y</u>	Concrete Base	Top Pipe
A.	809,339.0	1,228,226.5	4,265.11	4,267.46
B.	811,122.7	1,226,602.3	4,263.24	4,266.04
C.	810,616.5	1,225,992.1	4,264.94	4,267.90
D.	809,950.3	1,226.031.4	4,263.23	4,265.90



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APPENDIX M
Safety and Health Plan

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1.0 PROJECT DESCRIPTION

This plan describes the safety and health procedures and practices for the investigation to be conducted at Cannon Air Force Base. The tasks that will be covered by this safety plan are:

- o Monitor Well Installation (air rotary);
- o Soil Borings (deep hollow-stem auger and shallow portable auger);
- o Ground-water, soil, and waste sampling.

The procedures outlined in this document are applicable to all field team members including Radian employees and subcontractors of Radian. The Supervising Geologist at the site will be responsible for auditing compliance with this safety plan. The prime responsibilities for employee safety will rest with:

- o Radian for it's own employees;
- o Radian subcontractors for their own employees; and
- o With other parties whose employees will work under Radian's technical direction.

Variations from the safety and health plan may become necessary depending on situations encountered in the field, but may be approved only by the Supervising Geologist.

The purpose of this investigation is to determine if any environmental contamination has resulted from waste disposal practices, fuel spills/leaks and fire training activities at Cannon AFB. Also, Radian will provide estimates of the magnitude and extent of the contamination.

There exists a reasonable probability that the Radian and subcontractor activity will result in contact with waste contaminated materials. These waste materials include:

- o pesticide containers;
- o waste oils;
- o waste solvents;
- o jet fuels;
- o domestic solid waste;
- o assorted petroleum products;
- o hydraulic lubricants;
- o waste paints;
- o thinners; and
- o paint strippers.

The safety program designed for this investigation will involve the Supervising Geologist, the Drilling Contractor Supervisor, and the Drilling Crew. Presented below is a list of the responsibilities for the safety program.

1.1 SUPERVISING GEOLOGIST SAFETY RESPONSIBILITIES

The supervising geologist will be responsible for executing the safety procedures that are described in this plan. These safety procedures cover all on-site activities of Radian and direct sub-contractor personnel. Below is a list of the responsibilities of the supervising geologist and the Drilling Supervisor:

- o Locate support facilities in an uncontaminated area.
- o Initiate contact with the Base Safety Officer (Bioenvironmental Engineer).
- o Implement the site safety training as described in Section 4.0.
- o Observe site activities to ensure the proper use of personal protective equipment.
- o Initiate outside emergency phone calls when an injury or accident requires medical attention.
- o Ensure that work schedules, dependent on work levels and outside temperatures, are set each day and adhered to throughout the work day.
- o Ensure that the field team observes the work decontamination procedures as described in Section 5.0.
- o Ensure that safety equipment is maintained in a safe manner.
- o Report violation and compliance problems to Corporate Safety Office if corrective action is unsuccessful. (512-454-4797 ex. 5763, Andrew Ellis, Administrator of Safety and Health, Radian).

1.2 CONTRACTOR SUPERVISOR SAFETY RESPONSIBILITIES

The Contractor Supervisor will be responsible for the performance of the duties presented below:

- o Drilling crew compliance with the safety procedures as described in this plan.

- o Enforcement of corrective action under the direction of the Supervising Geologist. (Compliance problems will be brought to the attention of the Contractor Supervisor and He or She will be expected to correct the safety problem through a system of reprimands, eventually resulting in the dismissal of the offending employee).

2.0 HISTORICAL INFORMATION

Review of the historical records indicate that the base was used for waste disposal in the past. There is no direct evidence that the wastes have migrated off-site. There is evidence of obvious contamination at three sites:

- o Site #9, Fire Department Training Area;
- o Site #11, Engine Test Cell Overflow Pit; and
- o Site #15, AGE Drainage Ditch.

Evidence of environmental stress, due to past waste disposal practices at Cannon AFB, was not observed. Areas that are being considered in this investigation are listed below:

- o Fire Department Training Areas, (FDTA)
- o Landfills;
- o Waste Pits/Disposal Areas, and
- o Spill Areas

The sections presented below will discuss waste parameters and waste disposal practices at each particular site. Please refer to Figure 2-1, Cannon AFB Map.

2.1 SITE #9 FDTA #4

This site has been used as a fire department training area since 1974. From 1961-1974, the area was used for cleaning fuel trucks. The area is unlined and slopes towards a mock-up aircraft. You may encounter waste oils, waste solvents, and jet fuel at this site. Concern is for groundwater contamination. This site is the most obviously contaminated site on the base.

2.2 SITE #5 LANDFILL #5

This landfill has been in use since 1968. Materials received include:

- o domestic solid waste;
- o waste oils;
- o solvents;
- o paints;
- o paint remover;
- o paint thinners;
- o pesticide containers; and
- o various empty cans and drums.

The site now receives only empty drums, but until late 1981, the site was accepting 5-10 drums of waste oils and solvents per month.

2.3 SITE #15 AGE DRAINAGE DITCH

This site is a ditch that receives runoff from the maintenance pad adjacent to the AGE shop. Fuel and oil was washed into the ditch by rainwater over a period of years and the ditch now contains obvious evidence of contamination.

2.4 SITE #6 FDTA #1

Site #6 was operated as the fire department training area from 1959-1968. Waste oils, recovered fuels, and spent solvents were burned at this location. This site is being investigated due primarily to:

- o The known disposal of a moderate quantity of hazardous waste;
- o The proximity of the site to potable water; and
- o The distance to the reservation boundary.

2.5 SITE #11 ENGINE TEST CELL OVERFLOW PIT AND LEACHING AREA

Site #11 is the overflow pit and leaching field receiving washdown wastewaters from Engine test Cell Facility No. 5114. This site is being investigated due to the known hazardous wastes that were deposited there, the presence of contaminated liquid inside the pit and the proximity of the site to a potable water well.

2.6 ALL OTHER SITES

The remaining sites are not considered to present a significant concern for adverse effects on employee health and the environment, yet the field team should exercise caution when investigating any potentially contaminated site on base.

3.0 JOB HAZARD ANALYSIS

Job hazard analyses are conducted for each job that requires exposure to waste material. The purpose of the job hazard analysis is to identify the hazards associated with a job and develop ways to mitigate these hazards. The analysis involves three basic steps:

- o Select the job to be analyzed and break it down into successive steps;
- o Identify the potential hazards and accidents; and
- o Develop ways to eliminate hazards and prevent accidents.

A preliminary job hazard analysis has been performed for each work function at each site. Additional job hazard analyses will be performed by the Supervising Geologist to respond to inaccurately anticipated site conditions and work activities. The preliminary analyses have been used as input to the selection of procedures and precautions included in this Safety Plan.

3.1 SUMMARY OF WORK FUNCTIONS

3.1.1 MONITOR WELL INSTALLATION

Air rotary techniques will be used to install the monitoring wells. Some of the hazards associated with the drilling rig are presented below. Please make sure that you review these potential hazards before you start drilling operations. Some things to learn to avoid hurting yourself and others are listed below:

- o Always wear the proper personal protection as required by the Safety Plan.
- o Always wear eye protection while working on site, driving pins in drive chains, handling chemicals, breaking concrete or brick, cleaning equipment, hammering or sledging, cutting wires, grinding, or welding.
- o Don't set a heavy object on your foot.
- o Use the correct stance when lifting heavy objects, (get close, spread your feet apart, and lift with your legs, never twist while lifting).
- o Watch out for slippery surfaces or objects to trip on.

- o Be careful when using a hammer.
- o Never hang loose garments on a moving piece of equipment.
- o Always get treatment for even the most minor scratch or abrasion.
- o Watch out for swinging equipment. Most drilling equipment will break a rib if it hits you.
- o Wire, rope, chains, and catlines don't always stand the strain placed on them. Its too late to run after the rope or chain breaks. Inspect all ropes, wires, and chains before hoisting with them. Look for signs of abrasion, tears, weak spots, missing links, etc.
- o Watch out when someone is rolling drilling casing or pipe. It could get away from him and injure you.
- o Never throw tools or things up to or down from the drilling rig. Never drop things off the rig.
- o Apply grease and oil only through proper inlets and never while the machinery is moving.
- o Practice good housekeeping by cleaning up the site after work and keeping everything orderly.
- o Never perform welding unsupervised, always have a fire extinguisher handy and never weld in dry, grassy areas.
- o Make sure that all guards and safety devices are in place and in working order before starting the drilling.
- o Store all flammable gases and oils in separate, safe places.
- o Pay attention to overhead power lines. Always maintain a distance of 20 feet of clearance from any electric wires. Never locate a well under or near overhead wires. Contact the power company for free assistance if you must locate a well near a power line.

3.1.1.1 PERSONAL PROTECTIVE EQUIPMENT

- o Tyvek coveralls;
- o Gauntlet style, chemical resistant, neoprene gloves;
- o Chemical resistant, safety toed, steel, shank neoprene boots;
- o Respirator, full face-piece, air purifying equipped with organic vapor cartridges plus dust filters.
- o Safety helmet.

Depending on site conditions and drilling conditions, other items may be substituted or used for supplemental protection, as requested. Such items may include:

- o PVC bib overalls and jacket (especially for driller handling auger flights that have contacted the waste material);
- o Respirator, half-facepiece; air purifying equipped with organic vapor cartridges plus dust filters.
- o Chemical eye goggles when splash hazard exists;
- o PVC disposable gloves to be worn outside of the neoprene gloves.
- o Hearing protection

3.1.2 WATER SAMPLING AND WELL DEVELOPMENT

All installed wells will be developed, water levels measured, and locations surveyed and recorded on a project map. The primary hazards associated with well sampling will be potential dermal/eye contact with aerosols and solutions of organic compounds.

All well development, measuring, purging, and water sampling activities will be performed by persons wearing personal protective equipment (if necessary). This equipment may include all or some of the following:

- o Tyvek coveralls;
- o Gauntlet style, chemical-resistant, neoprene gloves;
- o Chemical-resistant, safety toed, steel shank boots, (PVC or Neoprene);
- o Chemical splash goggles or safety spectacles with side shields; and
- o Safety helmet.

Depending on site conditions and weather, other items may be used for supplemental protection. Such items may include:

- o Respirator, full- or half-facepiece, air purifying equipped with organic vapor cartridges plus dust filters.
- o PVC bib overalls and jacket;
- o PVC disposable gloves.

If results of ambient air monitoring as described in Section 6.1 are not within acceptable limits, respiratory protection will become mandatory during water sampling and development of monitoring wells.

3.1.3 SHALLOW AND DEEP SOIL BORINGS

The project will involve a number of deep soil borings in past disposal areas. These soil borings will be performed using the hollow-stem auger technique. The hazards associated with augering are similar to the hazards of monitor well installation and the personal protective equipment that may be required, are similar to the equipment required for water well sampling.

3.1.4 OTHER POTENTIAL HAZARDS

During this project there will be other hazards that are not listed above. Two of these hazards which may be present consist of the possibility of the team being exposed to freezing temperatures and wind chill and the possibility of drilling into a buried waste container or compressed gas cylinder.

3.1.4.1 HEAT STRESS

During the operation of this project, the Supervising Geologist must be alert for the signs and symptoms of heat stress. A hazard exists when employees are required to work in warm temperatures while wearing impervious protective clothing. When ambient air temperatures at the site exceed 65 degrees F, heat stress may become a problem. If these conditions are

encountered, the following precautions will be taken

- o The Supervising Geologist will regularly monitor ambient air temperatures.
- o Field team members will be observed for the following signs and symptoms of heat stress:
 - Dizziness;
 - Profuse sweating;
 - Skin color changes;
 - Increased heart rate;
 - Abnormal body temperatures as measured by non-invasive methods, (thermometer straps placed on the individual's forehead); and
 - Vision problems.

Any employee who exhibits dizziness, profuse sweating, abnormal body temperature, or vision problems will be immediately removed from field work and requested to consume 2-4 pints of electrolyte fluid or cool water every hour while resting in a shaded area until symptoms are no longer recognizable. The employee is not to return to work that day. Should the symptoms worsen, medical attention will be sought immediately.

3.1.4.2 FROSTBITE

During this project, the Supervising Geologist must be alert for the signs and symptoms of frostbite. Frostbite occurs when part of the body is affected by below-freezing temperatures. The flow of blood to the affected area(s) stops, and skin cells may be permanently damaged, in severe cases. Because of the anticipated conditions for the period of scheduled field activities (i.e., sub-freezing temperatures, high prevailing winds and wind-chill factors, and open areas with little protection) frostbite could easily result if proper precautions are not taken. The symptoms of frostbite

are hard, pale, cold skin that becomes red and painful when thawed out. Hands, feet, nose, and ears are most susceptible.

To avoid frostbite, it is important to wear several layers of warm clothes under a waterproof, windproof outer garment such as the Tyvek coverall. Also make sure that the face, hands, and feet are protected.

If frostbite occurs:

- o Get the victim medical attention as soon as possible;
- o Provide shelter from wind and administer warm drinks;
- o Cover frozen areas with additional clothing or blankets;
- o Do not use direct heat or rub the frostbitten area(s).
- o Encourage gradual, gentle movement, but do not allow the person to walk if the feet are frozen.

3.1.4.3 DRILLING THROUGH UNDERGROUND HAZARDS (UTILITIES/BURIED DRUMS)

During the planning/mobilization phase of the project, the Supervising Geologist should consult with base personnel to minimize the chance of drilling into or through utility lines. Prior to penetrating the ground, conduct a metal detection survey of each site to locate buried drums. If the cuttings indicate that a waste container has been punctured, cease drilling immediately and close the borehole.

4.0 SAFETY TRAINING

Prior to the initiation of site activities, a training session will be held to discuss the proposed work, associated safety and health plans, and emergency response plans. All personnel assigned to drilling activities and water sampling efforts will be instructed regarding the potential health and safety hazards associated with the work and protective measures available. Specifically, the following topics will be covered in the training session:

- o Potential routes of contact with toxic and or corrosive substances.
 - skin contact/absorption
 - eye contact
 - inhalation
 - ingestion
- o Types, proper use, limitations and maintenance of applicable protective clothing and equipment.
 - safety helmet
 - eye protection
 - gloves
 - safety boots
 - tyvek coveralls
- o Respiratory protection using full-facepiece or half-facepiece air purifying respirator with replaceable organic vapor cartridges plus dust filters.
 - Forms of respiratory protection: air purifying, air supplied, and self contained.
 - Selection of respiratory protection based on the hazard.
 - NIOSH certification of all equipment to be used on site.
 - Medical/Physical fitness to wear respiratory protection.
 - Use, limitations and maintenance of full-facepiece air purifying respirators, including a qualitative fit test, routine inspection, replacement of parts, cleaning, disinfection, decontamination and storage requirements.
- o Proper decontamination procedures and adherence to work zone boundaries.
- o Reporting of accidents and availability of medical assistance.

5.0 WORK ZONES AND DECONTAMINATION PROCEDURES

To minimize the transfer of hazardous substances from the site, contamination control procedures are needed. Contaminants must be removed from people and equipment prior to relocation from a work zone.

5.1 WORK ZONES

Prevention of exposures and spread of contamination will be controlled through the establishment of work zones. Two primary work zones will be utilized and will be referred to as the (1) Exclusion Zone and (2) Decontamination Zone.

The Exclusion Zone is the area where disturbance activities are conducted and where contaminants are or may be present. Only those properly trained individuals attired in the specific protective clothing and equipment will be allowed to enter and work in this zone.

The Decontamination Zone is the area where personnel and equipment will be decontaminated before moving to the next drilling site.

5.2. EQUIPMENT DECONTAMINATION PROCEDURES

The decontamination procedures for removing contamination from equipment during this investigation will involve four processes.

- o Steam Cleaning;
- o Diesel Fuel Brushing;
- o Acetone Rinsing; and
- o Detergent Washing.

The drilling rig will be steam cleaned following contact with waste/soil material and prior to leaving the decontamination zone. Diesel fuel brushing is only required in the event that auger flights become covered with tarry, sticky waste that steam and detergent will not remove. It will be helpful to have a wooden platform or rack on which to lay the flights for steam cleaning.

5.3 SAMPLING EQUIPMENT DECONTAMINATION PROCEDURES

Sampling equipment used in the exclusion zone will be decontaminated by washing with water, rinsing with acetone, and re-rinsing with distilled water.

6.0 SAFETY SUPPORT

In addition to the use of personal protective equipment and respiratory protection, safety support plans are also necessary. At Cannon AFB, safety support will consist of ambient air monitoring of hazardous and/or toxic materials for the protection of Radian and subcontractor personnel.

6.1 AMBIENT AIR MONITORING

Ambient air monitoring will be performed using the hnu sniffer. Air monitoring will be performed during drilling activities to determine if the respiratory protection chosen affords adequate protection from concentrations of contaminants found on site.

6.1.1 HNU SNIFFER

Ambient air will be monitored by an organic vapor analyzer to locate on-site organic vapor emissions that are higher than ambient outdoor air concentrations. The instrument will be used to determine general areas of elevated organic vapor concentrations, and not as a precise analytical instrument. It is an instantaneous measuring instrument and displays concentrations on a meter in parts per million (ppm), referenced to hexane.

The HNU Sniffer displays a meter reading directly in parts per million (ppm) volatile flammable vapor allowing an estimate of combustible gas

The respirators selected for use at Cannon AFB have been assigned protection factors by the National Institute for Occupational Safety and Health (NIOSH). These protection factors are listed in Table 6.1.2-2.

Table 6.1.2. RESPIRATOR PROTECTION FACTORS

<u>Type Respirator</u>	<u>Facepiece Pressure</u>	<u>Protection Factor</u>
Half-Mask Gas and Vapor Removing ^{a,b}	negative	10
Full Facepiece Gas and Vapor Removing ^{a,b}	negative	50

^aThe recommended respirator PF's are selection and use guides, and should only be used when establishing a minimal acceptable respirator program as defined in Section 3 of the ANSI Z88.2-1969 Standard.

^bFor gases and vapors, a PF should only be assigned when published test data indicate the cartridge or canister has adequate sorbent efficiency and service life for a specific gas or vapor. In addition, the PF should not be applied in gas or vapor concentrations that are: 1) immediately dangerous to life, 2) above the lower explosive limit, and 3) cause eye irritation when using a half-mask.

If the air monitoring data shows that concentrations in the air do not leave a comfortable margin of safety, work will be terminated until more air monitoring can be done and the respirator selection be re-evaluated.

6.2 PERSONAL AND SITE HYGIENE

All equipment that is contaminated and able to be disposed of will be placed in a waste drum or sealed inside a plastic bag.

Paper, rags, and other disposables used on site will be disposed of in waste drums or sealed in plastic bags.

No food will be consumed on the exploration site. Employees will wash their hands, forearms, and face before consuming food or beverages other than fluids contained in disposable cups. Drinking water and or electrolyte fluid will be available at the perimeter of the site being investigated. Disposable cups will be used to consume fluids after protective gloves are removed. Smoking and use of chewing materials will not be permitted on site.

Soil cuttings from augering which display contamination will be removed from the site in suitable sealed containers for eventual disposal.

6.3 EMERGENCY MEDICAL SERVICES

In the event of an employee injury or other medical emergency on site, the Supervising Geologist and any other personnel trained in first aid procedures will immediately provide assistance. A Survivair Self-Contained Breathing Apparatus will be nearby for use by the Supervising Geologist during emergency rescue situations requiring respiratory protection.

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A portable eye/face wash unit will be in the immediate proximity of any field work in progress. Flushing of the eyes should be started immediately (within 15 seconds) and should continue for 15 minutes whenever hazardous gas, liquid, dust, or particles enter the eye. Always transport an eye injury victim to a hospital.

Because contact lenses tend to hold contaminants in close proximity to the eye ball which inhibits flushing, contact lenses will not be allowed on site.

Additional first aid supplies will be kept close to field activities.

Medical emergencies that require outside medical attention will be treated first at the base infirmary and transported to the local trauma center in Clovis NM, if necessary. Emergency medical communications information will be posted in the support area for easy access.

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